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Applications of Cultural Theory and Empirical Analysis of Sustainable Energy Policy Preferences in Arkansas

John Henry Kester III
University of Arkansas, Fayetteville

Applications of Cultural Theory and Empirical Analysis of Sustainable Energy Preferences in Arkansas

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by

John Kester
Denison University
Bachelor of Arts in Biology and Economics, 2009
Northern Arizona University
Master of Arts in Sustainable Communities, 2011

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University of Arkansas

This dissertation is approved for recommendation to the Graduate Council.

_____
Dr. Geoboo Song
Dissertation Director

_____
Dr. Jon Johnson
Committee Member

_____
Dr. William McComas
Committee Member

_____
Dr. Kim LaScola Needy
Committee Member

_____
Dr. Steve Boss
Committee Member

Abstract

The local policy arena is ripe for research on policy elite decisionmaking because where policy diffusion is concerned, previous studies focus on state-to-state and city-to-city dynamics. Therefore, there is a significant opportunity to expand understanding about the adoption of policies and policy diffusion at the local level. Identification of individual level determinants that signify policy adoption is a cornerstone to fostering this knowledge. This study examines such preference indicators found among policy elites in select Arkansas cities. For this research, the primary theoretical perspective for evaluating individual determinants is cultural theory, which has shown strong correlation to individual policy preference formation in previous studies. The primary policy focus is on sustainable energy policies in Arkansas. In order to properly understand how and why local policy elites decide to adopt, or not to adopt, certain energy policies providing sustainable options to Arkansas cities, this study analyzed original data collected from a statewide Internet survey with policy elites in Arkansas (e.g. mayors, city managers, city council representatives, chamber of commerce members). The results of the social research display potential connections between policy elite preferences and aligned sustainable energy policy development.

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Thanks to Dr. Geoboo Song for his consistent support and advice throughout the dissertation development and writing process. Dr. Song helped formulate my research focus and assisted me in understanding the implications in the public policy setting. Dr. Song's mentorship expanded beyond the classroom setting by encouraging me to publish my research and present at the most prestigious conferences in the political science and public policy fields. I look forward to continuing to collaborate on research with Dr. Song in the future.

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Table of Contents

Figures

Tables

1. Introduction

I begin the introduction by providing a brief context for the theoretical rationale and practical motivation for pursuing this dissertation research. This frames the origins of my proclivity toward the identification of policy preferences and relevant policy development to support sustainable energy options in Arkansas.

An introduction to the research I gathered for the literature review and theoretical framework follows. I explain its relevancy to assessing the current status of policy diffusion research and the decision to focus on cultural theory as the theoretical framework for analyzing individual-level policy elite preferences.

After examining the research, I chronicle the areas where my suggestions for policy development are focused and what organizations will likely use the research outcomes to inform strategies to pursue sustainable energy policies in the state and larger region of the South. In the conclusion, I also share the future plans for research and recommend methodological improvements to address associated research limitations in this dissertation study. Lastly, I comment on the broader implications of the survey outcomes.

Theoretical Rationale

Previous studies focus on state-to-state and city-to-city dynamics when examining how policies diffuse from one location to another. Therefore, there is a significant opportunity to expand understanding about the adoption of policies and policy diffusion at the local level by looking at non-geographic elements that influence policy preferences. Identification of individual level determinants that signify policy adoption is a cornerstone to fostering this knowledge. This study examines such preference indicators found among local policy elites in selected Arkansas

cities. For this research, the primary theoretical perspective for evaluating individual determinants is Cultural Theory (Douglas & Wildavsky, 1982; Thompson et al., 1990; Ripberger et al., 2012), which has shown strong correlation to individual policy preference formation in previous studies. The primary policy focus is on sustainable energy policies in Arkansas. Sustainable energy policies include programs and process that encourage reduced energy demand or increase renewable energy generation and distribution. In order to properly understand how and why local policy elites decide to adopt, or not to adopt, certain sustainable energy policies to Arkansas cities, this study analyzed original data collected from a statewide Internet survey with local policy elites in Arkansas (e.g. mayors, city managers, city council representatives, chamber of commerce members). Previous research in the public policy field frames local policy elites in these elected and appointed roles where they hold political capital that can be used to influence the policy process (Moyer & Song, 2015). The most explicit definition in social science research comes from Skrentny (2006) where policy elites are defined as, "state actors with some influence over the direction, shape, and timing of policy making" (p. 1765).

The results of the social research display potential connections between local policy elites' preferences and aligned sustainable energy policy development. The following section begins by framing the practical motivation for the research focus.

Practical Motivation

The sustainable energy policy focus for this research on energy efficiency and renewable energy options is due to the dearth of adoption of related policies in the southeastern region of the United States, particularly Arkansas, and the need to spur innovation in the respective energy

fields through policy development. Cheap energy and conservative politics are often cited as the main determinants for the lagging nature of sustainable energy policy diffusion in the region (Brown et al., 2012). Without a concentrated demand-side impetus and conducive political landscape, many sustainable energy policy advocates lose motivation to push for adoption. The research approach taken in this dissertation study can help reinvigorate those wanting to take action because it will provide a more informed approach to the lobbying process. There are tangible trends in carbon emissions that encourage a shift in policy development to ensure a healthier and more stable environment.

Figure 1. Map of Carbon Emissions Intensity

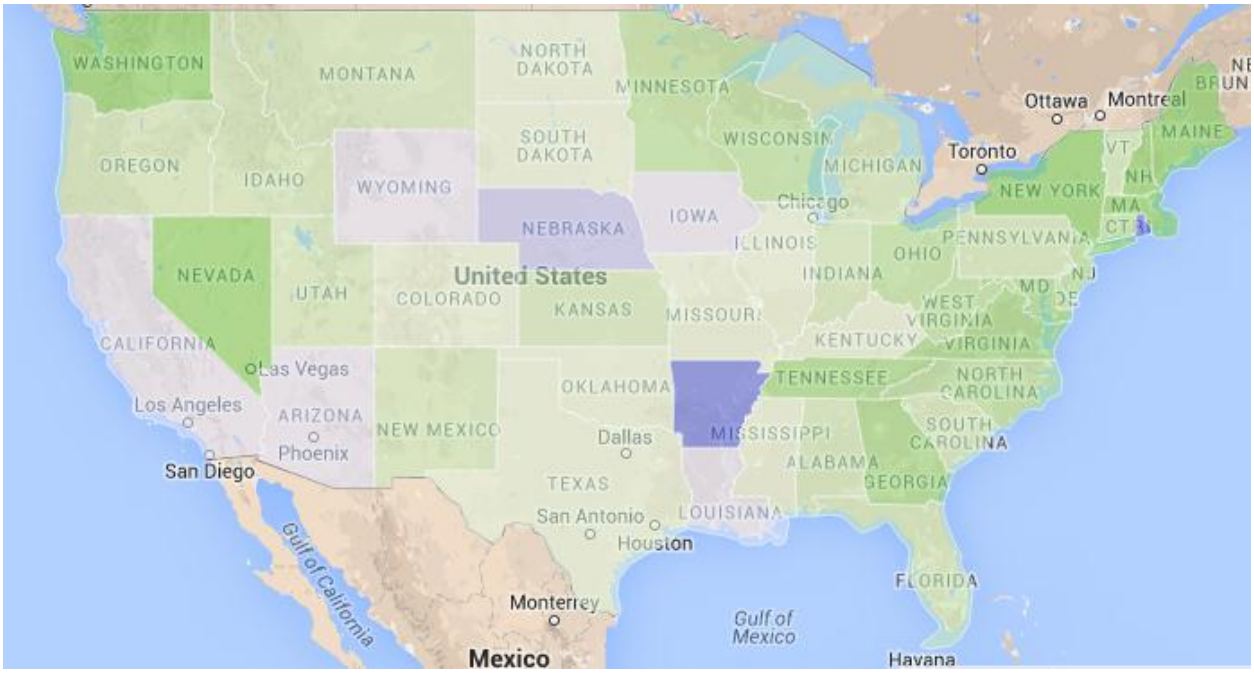
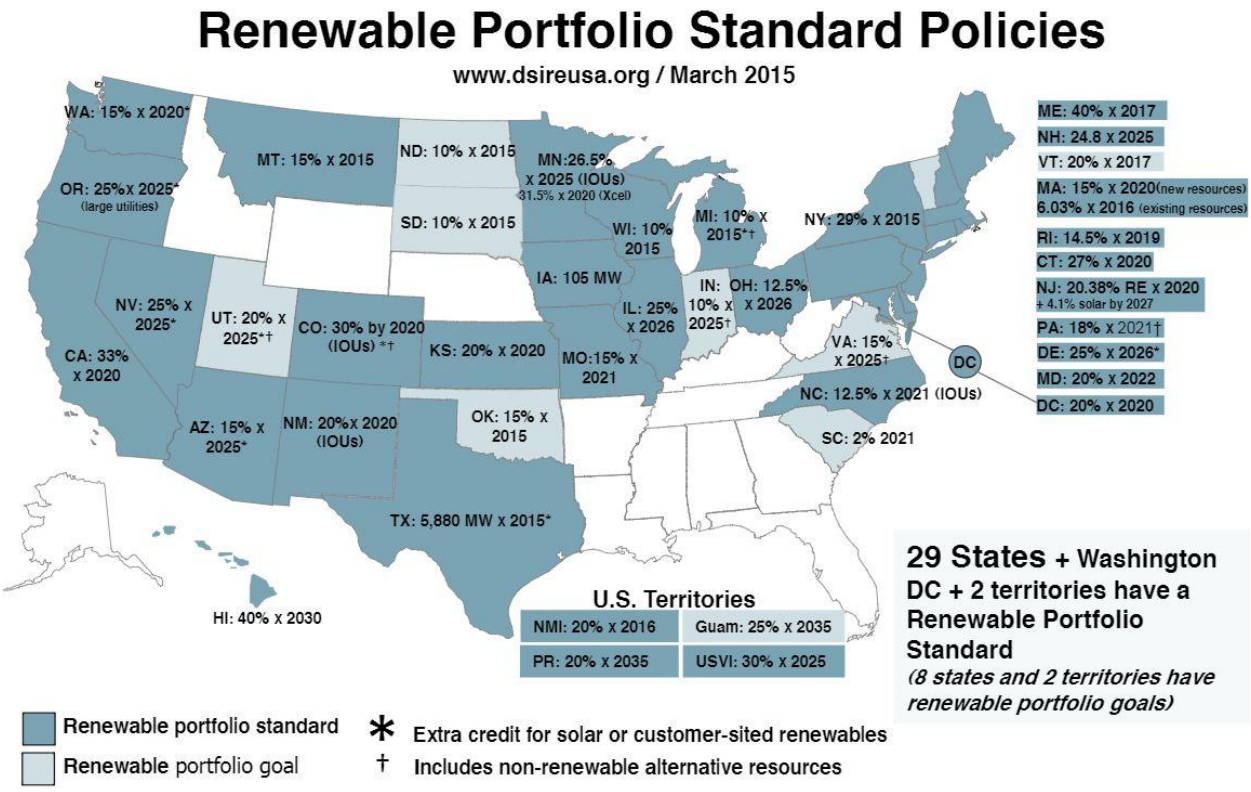


Figure 1 depicts the discrepancy between Arkansas and the rest of the country concerning the increasing and decreasing levels of carbon pollution. The darker shade of purple depicts increasing levels. The darker shade of green depicts decreasing levels. Arkansas represented the

highest increase from 2005-2012 with 35% more metric tons of CO_2 released than the baseline year of 2005. (U.S. Energy Information Administration, 2014). One contributing factor to continued increase in carbon emissions is from coal power plant electricity generation. Arkansas relies mainly on coal for its energy source and has been slow to take on renewable energy sources in overall state planning. More sustainable energy policies would help curb this unfortunate trend.

Figure 2 illustrates the current lack of sustainable energy policies and it is punctuated by the sparse number of renewable portfolio standards in the southeast region (Database of State Incentives for Renewable & Efficiency, 2015). Goals and standards are listed with percentage of energy resources to be provided by a certain year. The darker shade of blue depicts standards where the energy transition is required versus the lighter shade of blue that depicts goals for increased renewable options. No shading means no standards or goals are currently set. These policies reflect commitments to sustainable energy, without them, the region will continue to fall behind national efforts.

Figure 2: Map of Renewable Portfolio Standard Policies



Both of these visualizations portray a need to build a deeper understanding of the reasons for why more policies haven't been enacted to reverse these trends and to implement sound policies toward a diverse and clean energy future. The following research question spawns from this practical motivation to provide a robust understanding of what is driving this policy spectrum as it relates to sustainable energy options.

Research Question and Conjectures

My primary research question is as follows: "What is driving the lack of sustainable energy policy adoption in Arkansas?" Because of my interest and background in public policy, I

chose to focus on local policy elites' preferences as a potential source for inhibiting sustainable energy policy diffusion in the state.

For policy preferences, perceptions are primarily founded upon the basis of external social relationships. The individual garners a foundation of preferences, and whatever gaps exist are filled in from macro influences that are derived from the larger society and regional preferences (Wildavsky, 1987). Culture and politics are constantly intertwined, contributing to the formation of public policies. Although not a readily available body of information, such as other potential sources of policy preferences, cultural worldviews are tied both directly and indirectly to policy outcomes and can be assessed through survey questions. Therefore, a conjecture can be made that cultural orientations are a determining factor for local policy elites in general and particularly local policy elites, and will influence their attitudes and preferences toward energy efficiency and renewable energy policies in Arkansas cities.

Previous research in cultural theory and individuals' opinions about nature and environmental policies (Thompson et al., 1990) provides a foundation for hypothesizing which cultural orientations will support sustainable energy policies. Beginning with egalitarians, who consider nature to be clearly connected to social decisions and are expected to believe that the ecosystem is delicate, would likely worry more about the environment and sustainability than any other cultural type. They are more concerned about the environment and sustainability, not only because they care for nature, but also because they firmly believe that stringent restrictions on current business practices within the market will reduce commercial activities that produce social inequality and the legitimization of "unconstrained self-interest (Kahan et al., 2007).

Therefore, they are more likely to support and adopt energy efficiency and renewable energy policies in comparison with all other cultural types.

Strong individualists, who are essentially libertarians and strong advocates for free market capitalism, are predicted to believe that the ecosystem is quite robust and tend to undervalue any potential harm to the ecosystem generated by economic operations and activities (Thompson et al., 1990). They consider the government's strong environmental regulations not only unnecessary but also costly, and more importantly, a potential threat to their moral basis of free markets. Local policy elites who are strong individualists are likely to be reluctant to support and adopt sustainable energy policies.

Individuals with a strong hierarch tendency would perceive any deviations from status quo or any disruptions in established rules and social order as potential threats (Thompson et al., 1990). Although they would deem nature to be fairly resilient when compared to egalitarians, they are inclined to rely upon expert authority in deciding the level of human exploitation that can be forgiven and tolerated by the ecosystem. When dealing with issues regarding environment and sustainability, strong hierarchs are expected to be relatively more unbiased than egalitarians or individualists, unless they perceive any substantial threat or gain to their preexisting moral order from the introduction of related novel technology or business activities. Therefore, the hypothesis is that strong hierarch policy elites' propensity to support and adopt energy efficiency and renewable energy policies would be situated between egalitarians' and individualists'.

Strong fatalists tend to retain an inclination for merely coping with random events in a perceived unsystematic world, instead of undertaking active involvement in planning, controlling, and managing such events or learning from them. Within the same vein, they are

reluctant to reveal their attitudes, preferences, and intentions toward any policy issues in comparison with other cultural types. No previous studies reported any significant findings regarding fatalists' attitudes toward environment and sustainability (Jones & Song, 2014; Song & Conner, 2015). Therefore, the conjecture is that strong fatalist policy elites' cultural orientations would not be meaningfully related to their likelihood of supporting and adopting any sustainable energy and environment policies.

The analytical chapters that focus on specific sustainable energy policy types will adopt similar conjectures that are presented here on overall sustainable energy policy preference **(**Kester III & Song, 2014). Further justification is provided for these expectations in the literature review of the respective chapters.

Dissertation Chapter Rationale

The forthcoming dissertation chapters are broken up into a theoretical framework, a methodology chapter, followed by three analytical chapters, and summarized with a conclusion chapter. The first analytical chapter provides an aggregate look into correlations between policy elite preferences and sustainable energy policies. All of the different types of energy efficiency and renewable energy policies assessed in the survey were pooled together to represent the overall preference for each individual policy elite in regards to sustainable energy policy options. The second analytical chapter breaks down the sustainable energy policies by their focus on energy efficiency or renewable energy. These distinctions intend to illustrate any differences there are in the patterns of preferences according to the direct focus of the sustainable energy policy. The rationale for including these two aspects of policy is because energy efficiency and renewable energy are seen as complementary in reducing energy consumption, reducing

pollution, and cutting down fossil fuel use (Omer, 2007), however renewable energy technologies and policies often experience more barriers to implementation (Dincer, 2000; Painuly, 2000; Tsoutsos & Stamboulis, 2005). The goal of the analysis was to see if there are differences in preferences between the two policy types. The third analytical chapter follows a similar line of reasoning for distinguishing policy options and the goal of the analysis, however it focuses instead on incentive-based and regulatory policies that were assessed in the survey. In the past decades, a primary focus in the realm of sustainable energy and environmental policy has been investigating which approach is more effective overall, and in which policy setting is each more applicable (Beck & Martinot, 2004; Hahn & Stavins, 1992; Smith, 2009; Tietenberg, 1985).

After attending conferences in both the political science and public policy fields, feedback on opportunities for data analysis from the statewide policy survey centered on how to further focus the types of policies so more action-oriented conclusions could be discerned from the findings **(**Kester III & Song, 2014). Rather than only being able to say a certain set of variables or a type of cultural worldview will align with an overall preference toward sustainable energy, the more granular dependent variables represented by sustainable energy policy type will yield opportunities to provide direct guidance and insights for framing future policies.

The introduction has outlined the motivation for the research, presented the driving research question and conjectures for research outcomes, and provided a rationale for the focus of the dissertation chapters. The conclusion of the dissertation discusses how the outcomes of the three separate data analyses can be applied to the public policy setting and how the results will contribute to the broader theoretical discussion. Limitations of the research, potential revisions to

the methodology, and future iterations of the survey will also be outlined. The goal is for each individual analytical chapter to be published in the major journals of public policy or related studies, such as *Policy Studies Journal* or *Energy Policy*. The final section of the introduction summarizes the intended broader impacts and implications of the research.

Broader Impacts and Implications

Providing a potential approach to tailoring policy options to inform where to focus energies and support for sustainable energy policies is a key outcome of this research. The quest for efficiency and effectiveness can be difficult in local policy because of the variations that exist across different geographic and political environments. Especially in the field of sustainable development, it is difficult to set criteria that can remain seamless across cities (Krizek & Power, 1996). By examining a set of worldviews that are relatively constant and consistent as an important component of local policy elites' belief systems, there is potential to garner better-informed guidance for appropriate policy options. Investing time toward understanding the source of an individual's policy opinions and preferences is worthwhile because this type of information will remain reliable over a period of time. If there is, for instance, a connection to types of sustainable energy policy options that policy elites prefer based upon their worldviews, then there is cause for further investigation at the local level.

Advancing beyond centralized explanations fixed in city contextual factors is another prominent goal of the research. The nuances and complexities in the policy setting require in-depth social research at the individual level. The realization of fundamental links to core cultural beliefs is relevant to motivations for sustainable development and promotion of innovations that fit the bill. Viewing human activities as contributing to our cultural development as well as

impacting our natural environment is a big step in coordinating a comprehensive discussion of what guides decisionmaking (Krizek & Power, 1996). This evaluation revolves back to the original inspection of policy diffusion research, which was to determine the base level environmental and social conditions that lead to adopting a new social phenomenon. This broader connection brings the research to its theoretical foundations and supports broadening the interdisciplinary spectrum in diffusion research.

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2. Theoretical Framework

The theoretical impetus for this research is the primary framing for policy diffusion research and its perspective on how policy approaches are implemented in new settings. From its origins, policy diffusion research focused on a geographic framework and began by examining contextual factors influencing diffusion, such as city size and demographics (Crain, 1966), policy types (Gray, 1973), and communication systems (Walker, 1969). Policy diffusion currently expands on these observed trends in contextual factors to investigating the specific mechanisms (e.g., learning, competition, imitation and coercion) that define the process itself (Berry & Baybeck, 2005; Berry & Berry, 1990; Shipan & Volden, 2012). This perspective on diffusion has yet to take an in-depth look at the individual policy elites' role in this transitional process (Shipan & Volden, 2012). The choices made by policy elites contribute to the collective decision of larger societal entities. In the local setting, especially, policy elites possess a significant level of control and influence (Krizek & Power, 1996). The dissertation research investigates the ways an individual perspective can be meaningfully incorporated into the policy diffusion discussion.

In order to accurately explore the rationale and motivations behind policy elite decisions, there must be an explicit connection drawn to the sources of individual policy preferences. I contend that the grid-group cultural theory framework of Mary Douglas and Aaron Wildavsky could fulfill this capacity. It is widely accepted that political decisions are made based upon personal and constituent interests (Ball, 1979; Thompson & Schwarz, 1985), which are largely determined by the cultural worldviews ascribed to by an individual (Wildavsky, 1987). Cultural worldviews, from a cultural theoretical perspective, are intrinsic values within individual belief systems that determine proper characteristics of social relationships. Of course, there are other

theories of preference origins such as gender (Shapiro & Mahajan, 1986), party ideology (Krause & Mendez, 2005), and special interests (Lohmann, 1998). These other theories, however, are often limited in their application because they primarily apply to politically-charged issues, such as welfare distribution (Ripberger et al., 2012; Song, 2014; Song et al., 2014). Cultural theory is not restricted in this capacity and can help build a clearer understanding of policy elites' policy preference formation, which is expected to ultimately translate into policy adoption and diffusion tendencies across various policy and jurisdictional domains.

Where policy adoption and diffusion are concerned in policy studies, previous research focuses on state-to-state dynamics, which leaves room to expand understanding about the policy adoption and diffusion process at the local level. Identification of individual level determinants that signify policy adoption is key to fostering this knowledge. Based upon cultural theory of policy preference formation posited by Mary Douglas and Aaron Wildavsky, this research aims to expand theoretical examinations of cultural theory factors amongst policy elites at city jurisdictions in the state of Arkansas within the context of their policy decisions concerning energy efficiency and renewable energy.

The sustainable energy policy focus on energy efficiency and renewable energy is due to the absence of adoption in the southern region of the United States, particularly Arkansas, and the need to spur innovation in the respective energy fields through policy development. Cheap energy and conservative politics are often cited as the main determinants for the lagging nature of diffusion in the region (Brown et al., 2012). Without a concentrated demand-side impetus and conducive political landscape, many sustainable energy policy advocates lose motivation to push for adoption. This kind of research can help reinvigorate those wanting to take action because it

will provide a more informed approach to the lobbying process. This perspective is where the theoretical and practical underpinnings of the research crossover aiming to provide insights into how the diffusion of different types of sustainable energy policies can be guided moving forward. The following section provides a more in-depth look into the associated literature to the theoretical frameworks outlined above.

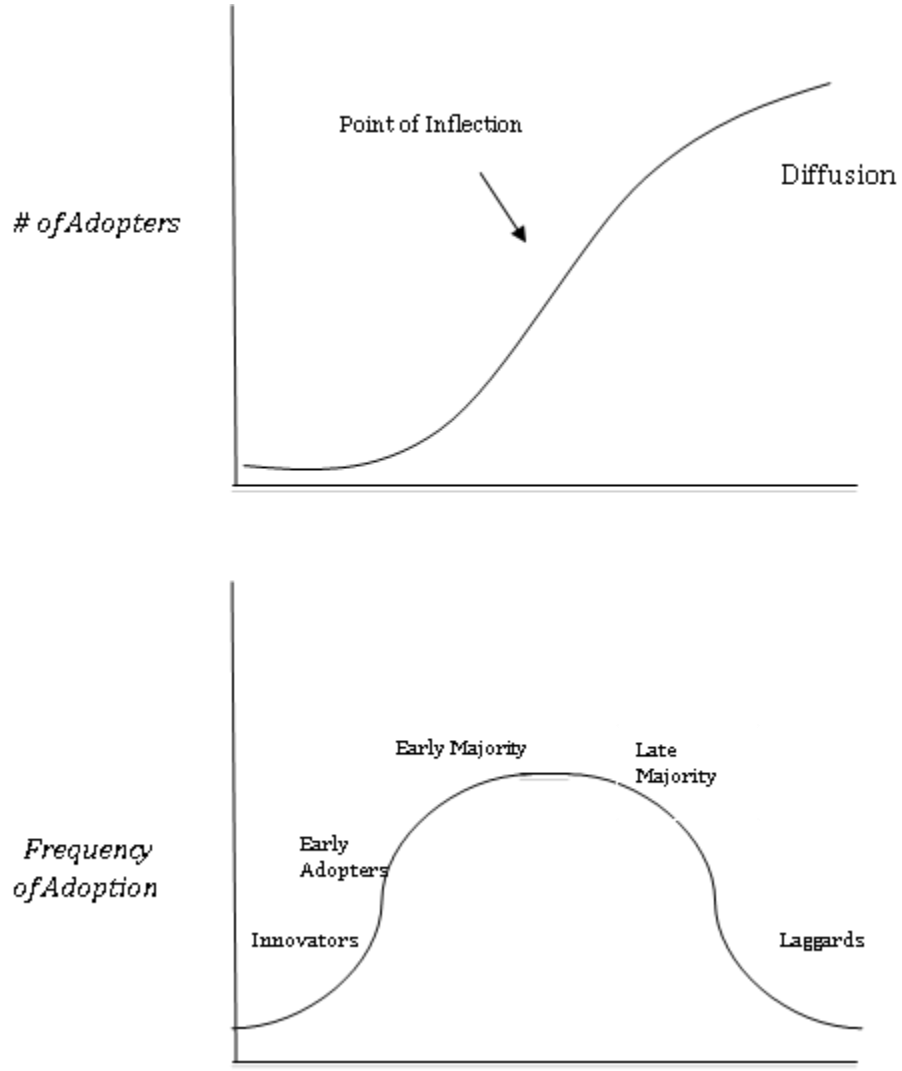
Literature Review

The primary areas of theoretical literature related to this research study and investigating policy elite preferences are policy diffusion, methodological individualism, and cultural theory. Policy diffusion research provides a foundational perspective on the movement of policies and the process of adoption in new political settings. This research into overall sustainable energy policy preferences will further the theoretical discussion by providing a novel look into policy elite preferences from an individual basis and including the influence of cultural theory on perceptions of preferences. Therefore, methodological individualism is included as the second primary area of literature reviewed to highlight the resurgence in focus of social research in the public policy setting. Lastly, cultural theory is outlined to illustrate the opportunity to provide a well-defined approach for determining origins for policy preferences and establishing the explanatory power offered by its application simultaneously to policy diffusion variables. Each section examines current and seminal work in the field to give a comprehensive overview of relevant literature. After the theoretical literature review, the policy focus of sustainable energy is discussed to define the policy context for applying the following theoretical framework.

Understanding the Policy Diffusion Process

Policy diffusion examines the process of adopting new public policies and how other policy choices made elsewhere influence this process (Shipan & Volden, 2012). There is no uniform definition for public policy, but the following description covers the general premise: policies are plans of action that provide guidance for addressing selected public concerns (Torjman, 2005). Public policy can be thought of as collective action orientation and collective decisionmaking that is based upon a due process and a social consensus (Song et al., 2011). From these two perspectives, the diffusion research is focusing on how governance structures develop guidelines that provide consensus-based solutions to social problems (e.g., pollution and welfare. A typical model for adoption of innovation is the S curve (Bowers, 1937; McVoy, 1940; Ryan & Gross, 1943). This depicts a clear trend of adoption where the number of adopters varies over time with an initial increase and latter decrease in frequency reflected in the slope of the curve (Mahajan & Peterson, 1985). The S-shaped curve includes five stages of diffusion that characterize the adopter on a temporal basis. The stages include innovators, early adopters, early majority, late majority, and laggards. These stages correspond to the S curve and its inflection point, which differentiates the early majority from the late majority adopters (Figure 3; Rogers, 1962). Models for diffusion have grown from this basic portrayal to more complex representations of the process. Early trends in innovation diffusion were evident in many historic innovations and social systems, such as the inclusion of radioisotopes in U.S Hospitals (Mahajan & Peterson, 1985). From these early evaluations of successful innovation diffusion, there developed multiple perspectives for what the primary influences were in determining the path of diffusion.

Figure 3: Policy diffusion S curve and adopter curve



The three policy diffusion models include an internal determinants model, a regional diffusion model, and a national interaction model (Berry, 1994). The internal determinants model focuses on the conditions within the local setting that influence the policy diffusion process. This can be extended to the state level, and the different mechanisms can be observed in different settings. The regional diffusion model examines the policies that contain similar characteristics and are adopted in a regional setting, such as the southern portion of a state or the northeastern

part of the country. These larger frames of reference for policies can illustrate broader trends that can eventually predict future paths of policy diffusion. The national interaction model describes how national policies and mandates influence the transfer of policies.

These models, however, lack the resolution that can be addressed by developing ways to foster an individual level analysis. In all of these situations, there are key factors that determine the degree to which policy diffusion mechanisms play a role. Key actors in policy diffusion include policy elites (e.g., mayors, city council members, chambers of commerce, city planners in the context of local policymaking and politics). These policy elites can be influenced by both external and internal inputs and can gain deeper understanding of the options that exist to address relevant policy issues. Examples of external inputs include education, training, and information transfer (Rahm, 1993). These are all noted as ways to improve a policy elite's capacity to understand policy options and relevant innovations. Other external inputs, such as special interests, also pass along information via lobbying to policy elites to guide them in making a specific choice, rather than building understanding at an individual level (Lohmann, 1998). Internal inputs come primarily from social interactions and worldviews, which policy elites adhere to as a filter to these external inputs (Wildavsky, 1987). In combination with these inputs, policy elites interact with the mechanisms of policy diffusion, exerting significant influence and making important decisions regarding policy adoption. With these perspectives on policy diffusion, the next section addresses how individual policy elites can be analyzed to build an understanding of the source of their preferences and opinions regarding policy options.

Methodological Individualism and Policy Elites as an Analytical Emphasis

Previously, policy diffusion research has had a holistic perspective with a systemic focus on the external and internal influences on the policy setting that impact policy adoption and diffusion (Brown, 1981). The granularity lost in examining only the macro-level outcomes of the policy setting and collective group decisionmaking can result in a cursory examination of the diffusion process. Another reason to implement an individual focus is because of the various modes of communication that are deemed to influence a policy elite.

In addition to the communication paths, a policy elite's capacity for making policy recommendations and decisions can be defined by a number of factors. These include innovativeness, one's general propensity to adopt, policy demand, resistance, values, practicality, and appropriateness (Brown, 1981). The idea of looking at the individual-level factors and policy elites' roles that impact these characteristics brings a fresh perspective to the policy diffusion discussion. The goal is to build an understanding that the diffusion process is not solely influenced by communication mediums and geographic differences (Blaikie, 1975; Demerath, 1976; Weinstein, 1976). In addition to these factors, the group interactions a policy elites is subject also make an impact on preferences and choices.

Group research for policy implications has been well studied under the Advocacy Coalition Framework (Sabatier & Jenkins-Smith, 1993). Past research has identified how groups and organizations come together in a policy setting with a collective agenda (Sabatier & McLaughlin, 1988; Sotirov & Memmler, 2012; Weible et al., 2011). Often a focus of the coalition research is the role of political elites. These are individuals who wield significant influence over political institutions, and their shifts in opinions over time are accompanied by an

observed effect of changing the belief systems of the larger social organizations. For the purposes of this research, elected mayors, city council representatives, city managers, city planners, and local chamber of commerce members serve as a representative sample of policy elites. The comprehensive understanding of an individual's contribution to a new policy discussion is therefore vital, and keeping the research scope at this level would help build a deeper understanding of the source of these political elites' rationales. There is also a marked resurgence in methodological individualism in contemporary political science research, which supports the significance of individual-level analysis (List & Spiekermann, 2013). The final section of the literature review examines the application of cultural theory to policy preference formation.

Cultural Theory of Policy Preference Formation

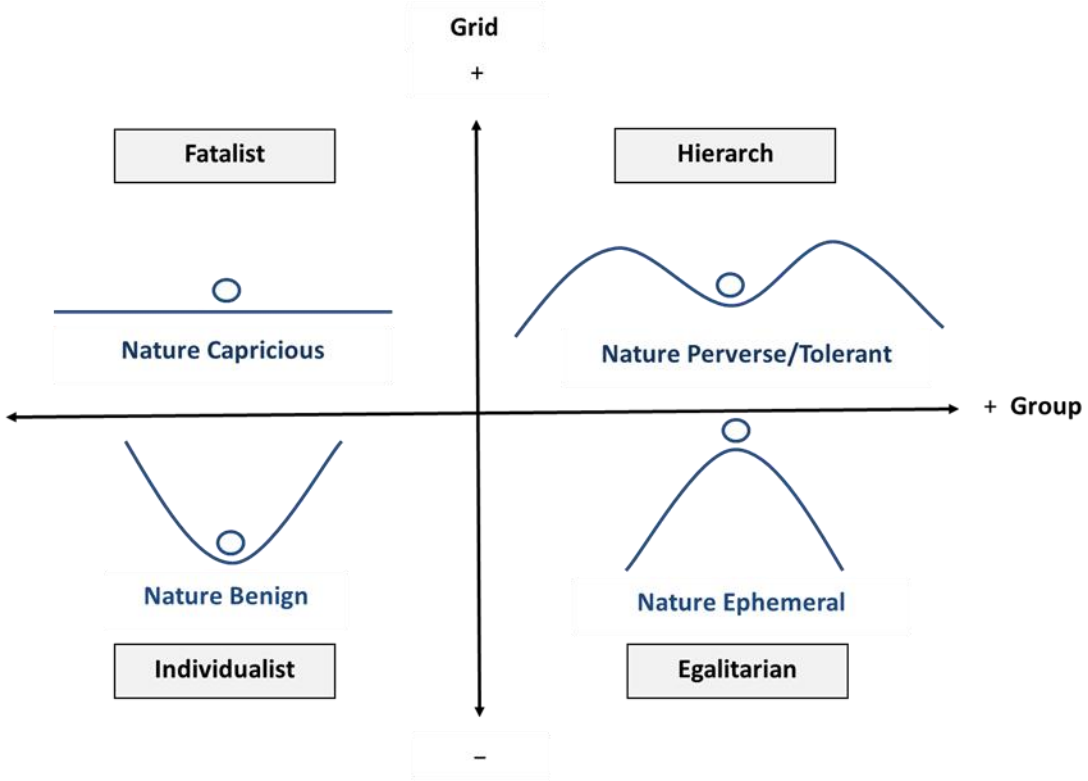
Perspectives come from interactions with other people and the social medium (Wildavsky, 1987). Cultural theory has been observed as a significant determining factor in preferences for individuals and as a more powerful indicator than alternative explanations (Coughlin & Lockhart, 1998; Ellis & Thompson, 1997; Grendstad & Per Selle, 1997; Thompson et al., 1990). One important aspect of political science research is to ascertain the origins of political ideas. For instance, Simon (1985) attempts to understand the rationales and motivations a political actor uses to make political choices. It is clear that political decisions are guided by personal interests and values, but the question at hand is: what determines these interests and values? (Cohran, 1973; Thompson & Schwartz, 1985). A specific action may not seem economically rational, but it is safe to say that any decision made is partly based upon a cultural rationale (Wildavsky, 1987).

Cultural theory allows for the research into political decisionmaking to expound on the alternative perspectives and consider the source of preferences as endogenous to social systems (Dake, 1991, 1992; Douglas & Wildavsky, 1982; Wildavsky, 1987). The original static assessment of preferences (Michael & Becker, 1976) has evolved into one of nuances and expected variation over time (Wildavsky, 1987). In the meantime, between the variations over time, observed patterns and trends emerge. In the process of decisionmaking, in any space, whether it be economics or politics, cultural constructs can be observed as origins of preferences (Wildavsky, 1987). Therefore, understanding the cultural background and worldview of policy elites is a significant component for comprehending the trends and patterns that grow out of an individual's choices. The recurring patterns and trends can be predicted and connected to decisions made in the policy realm.

There are four common cultural perspectives: *hierarchism, egalitarianism, individualism* and *fatalism* (Leiserowitz, 2006; Peters & Slovic, 1996; Thompson et al., 1990). Strong hierarchs are willing to align with other individuals in a group setting and are cognizant of participation. The collective welfare of the group is put before themselves, and hierarchs respect the knowledge of experts when considering a decision. Strong egalitarians fully embrace the greater good of society and the guidance of communities as the path toward this end. This worldview desires a societal focus in decisions, without external guidelines or prescriptions. Strong individualists favor little in the way of structured groupings and governmental guidance. This cultural type does not ascribe to structural constraints of personal actions. Lastly, strong fatalists hold no association with groups, but they retain an adherence to external constraints (e.g., laws) and believe outcomes are determined by fate. Individuals (e.g., policy elites) use these

perspectives as filters for processing new pieces of information. Cultural perspective influences the assessment and the eventual action taken or choice made. These characterizations serve the purpose of defining comprehensible divisions that can be interpreted and identified for research purposes. As with policy diffusion mechanisms, cultural worldviews are not hard and fast delineations and are often materialized in more nuanced forms as degrees of each worldview exhibited in different policy situations (Jaeger et al., 1998). The following figure depicts these cultural perspectives and aligned perceptions of nature (Figure 4; Schwarz & Thompson, 1990).

Figure 4: Grid-Group Diagram for Cultural Theory



Grid refers to the level of commitment to following an external set of guidelines and prescriptions. Both fatalists and hierarchs align with this commitment and distribution of managing society. Group refers to the level of commitment to the larger social well-being and

the importance of considering this perspective when making decisions. Both hierarchs and egalitarians see this perspective as a responsibility for considering impacts of decisions. Included in the diagram is the connection to the interpretation of impacts decisions have on nature and serves as useful corollary to potential preferences toward environmental policies. Nature is seen as out of human hands and not impacted by daily decisions by fatalists. Individualists believe that nature is resilient and is a useful resource for supporting human development and markets. For Hierarchs there is an acknowledgement of an impact, but their affinity toward considering nature in decisionmaking depends upon the policy issue and the current level of regulations. Hierarchs will support guidelines suggested by relevant issue and policy experts if they see a gap in current environmental policies. Egalitarians consider nature to be clearly connected to social decisions, but will only align with efforts to address environmental issues when they are developed from a community perspective. There are different relationships to different social issues and the cultural worldviews serve as a starting point for identifying where individuals will fall in their policy preferences.

Current research in applications of cultural theory to the public policy setting illustrate its explanatory power and capacity to provide rigor to constructing values as they relate to policy development and adoption. With the existence of mutually conflicting consistent worldviews, there will always be a need to adapt policy approaches to policy settings (Jacoby, 2014). According to the theory of motivated reasoning, individuals are likely to reaffirm initial perceptions when presented with facts that conflict with their current understanding (Robinson, 2014). This theoretical notion makes it all the more significant to intentionally design policy narratives and approaches that fit within cultural frames rather than relying solely on building

knowledge and understanding around relevant issues (Jones, 2014; Ney & Verweij, 2014). Identity affirmation with sources of information can also help foster buy-in from individuals regarding policy preferences (Song et al., 2014). The true strengths in applying cultural theory is to have a replicable, measurable, and generalizable approach for categorizing origins for core values (Jenkins-Smith et al., 2014; Ripberger et al., 2014). Regarding policy sectors for research, there is an opportunity to expand findings in the energy policy realm. Previous research has focused on healthcare, economic, environmental, and national security policies (Jenkins-Smith et al., 2014). This offers an opportunity for cultural theory to be directly applied to energy policy, a topic not explicitly researched using its constructs.

Beyond the theoretical scope, the latest cultural research studies provide methodological insights for including alternative explanations in the scope of the study to show the applicability of cultural theory variables in explaining relationships between policy preference independent and dependent variables (Song et al., 2014). There is additionally an opportunity to expand research at the policy elite level. Most of the current survey approaches look at public perceptions related to policies (LaChappelle et al., 2014).

This theoretical background is used as the underpinning for the following chapter that details the methodological approach taken to collect and analyze the survey data.

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3. Methodology and Survey Outcomes

In this chapter, I describe the organization and process for distributing the Arkansas policy elite survey that was designed to analyze individual policy elite preferences toward sustainable energy policies. I provide details about how I used the survey responses and regression models to illustrate possible origins for preferences and signify significant variables influencing the preferences. Further, I explain how I propose using the outcomes to inform policy narratives and strategies related to sustainable energy policies. To provide context for the methodology, I describe the research setting, sample population, and survey distribution, collection, and analysis steps.

Methodology

The following sections describe the data collection and analytical approach for researching local policy elite perceptions of and preferences toward different types of sustainable energy policies in relation to their cultural worldviews in the state of Arkansas.

Scope of Research

City planners, city councils, mayors, city managers, chamber of commerce members and other elected and appointed municipal officials influence local policy (Wheeler, 2004) and are used as the population for this study. Because of their significant influence on public policy, they are referred to as local policy elites for the purposes of the research, as described in previous dissertation chapters. Alternative explanations to the cultural theory measures, such as demographics (Shapiro & Mahajan, 1986), party ideologies (Krause & Mendez, 2005), and policy diffusion contextual variables (e.g. economic feasibility, technological feasibility, land

use, public support; Doris et al., 2009) based on local policy elite perceptions, were also measured in the study. These characterizations of policy elites allowed for a comparison in the correlation of the independent variables to the dependent variable of policy preferences. Data collected from a statewide Internet survey provides the research findings to evaluate how the individual policy elites perceive these sustainable energy policies in the state of Arkansas and their influence on the adoption process. The measures for the sustainable energy questions for the survey are based upon current policies in Arkansas cities, the national American Council for an Energy Efficient Economy City Energy Efficiency Scorecard, and the International City/County Management Association Sustainability Survey.

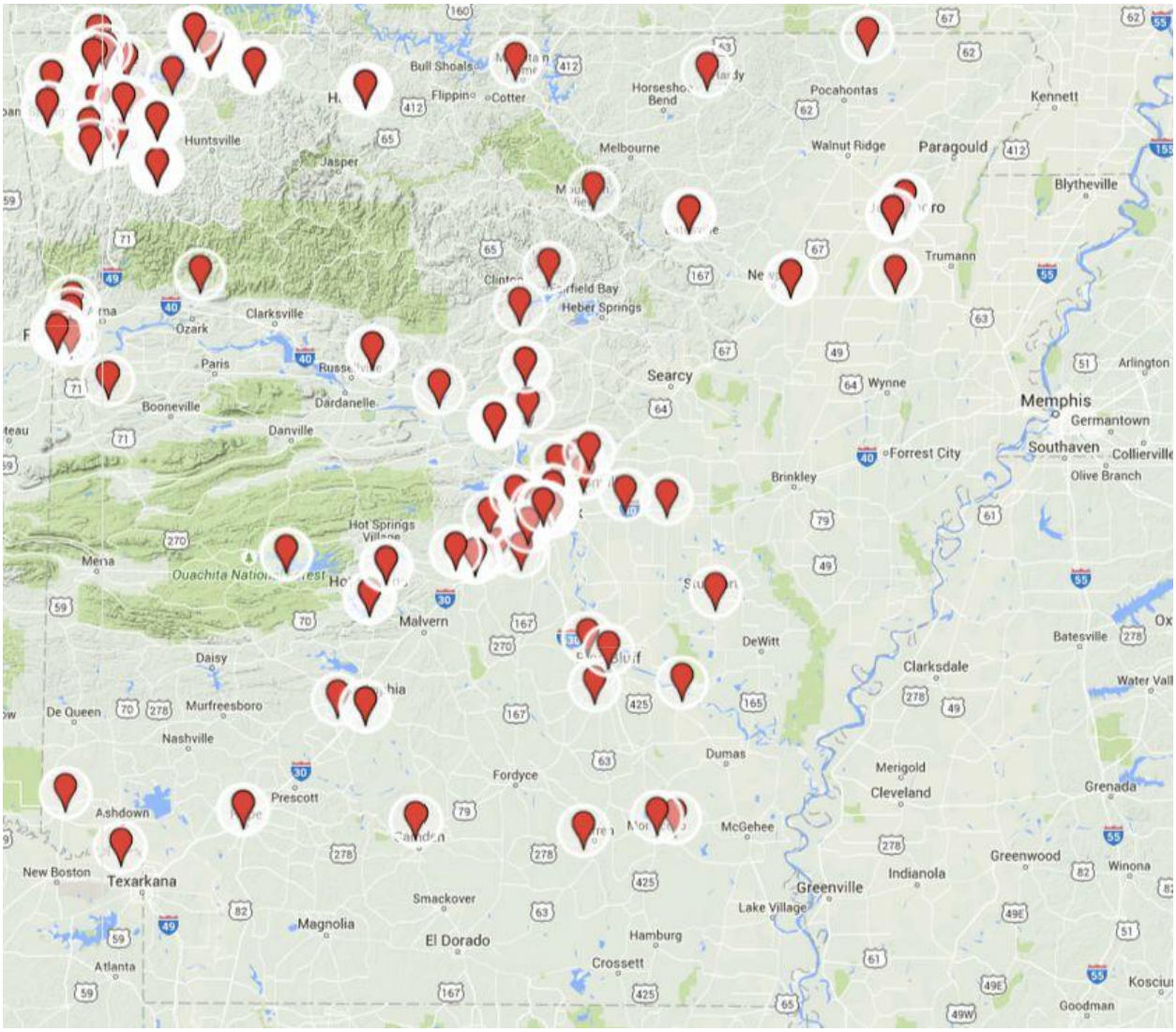
Research Setting

In regards to defining the research setting, there are many definitions for cities that deal with population densities and locations of population centers, which have varied algorithms for determination (Rozenfield et al., 2011); thus, the basis came from more tangible governance delineations. Cities were considered as those that are self-governing bodies, also known as incorporated municipalities. These cities are identified as such by the United States Census Bureau (2013). The population size for cities was constrained at the lower level of 800 based upon the smallest city size in the Sustainable Energy Scorecards and Education for Municipalities (SESEM) program, Gould, Arkansas. This program, which was implemented to provide education and outreach to Arkansas communities aiming to improve their sustainable energy policies, was used as a benchmark for policies to research in the state because of its direct relevance to practical motivation for the dissertation research. According to the Arkansas Department of Parks and Tourism Office there are 734 cities and towns in the state (2013). Some

of these cities and towns were not be included because they fall below the population size of Gould, Arkansas. As a rough estimate, there are approximately 4,000 policy elites that would fit the category of mayor, city manager, city council representative, or appointed planning official (500 cities, 8 policy elites/city estimate). The population sample for the survey was determined by participation in the statewide survey, with a goal of 400 participants. The following sections outline the steps of data collection in more detail.

Responses came from a wide range of cities in Arkansas, with the map of respondents reflected below (Figure 5). The map shows that although there were concentrations of respondents to the more populated areas in northwest and central Arkansas, there is still representation throughout the state, including the Delta region. The red pin marks depict the location of respondents for the survey.

Figure 5: Survey Respondents Map



Statewide Internet Survey

The policy elites for the statewide Internet survey were from the pool of mayors, city managers, city council representatives, appointed planning officials, and chamber of commerce members in Arkansas cities. The survey was open to policy elites from March 17, 2014 to April 8, 2014 and from July 22, 2014 to August 27, 2014. An email was sent to all available policy

elites whose contact information is publicly available through the city websites, which was approximately 2,471. The email included a succinct description of the survey and its intent. The voluntary survey contained 36 substantive questions and was approved by the Institutional Review Board (Appendix). There was the option for recipients of the email to send the survey link to other policy elites. The questions focused on Arkansas energy policy issues, including city level sustainable energy options, high voltage power line installations, cultural worldviews, affective feelings, knowledge of Arkansas energy sources and legislation, trust on information sources, party affiliation, and demographics (Moyer & Song, 2015).

Larger trends being reflected at the micro-level allow for future research to determine the causality of certain relationships in the sustainable energy policy adoption arena. The survey provides a snapshot of the policy landscape. Taking this assessment of policy preferences and opinions to the point of implementation required a descriptive perspective of the policy elites in comparison to general state population.

Table 1 depicts the differences (e.g. gender, education) in the Arkansas local policy elite sample surveyed for this research and the general population of the state. This presentation of demographics is meant to illustrate the distinction of policy elites in the survey pool. It is noteworthy that although the age is similar between the general population and the local policy elites, there are more males represented, a higher educational attainment, a higher average annual income, and a higher percentage of white individuals in the local policy elite survey respondents. As noted in the introduction, explicit definitions for the term policy elites are still formulating and this comparison helps to further highlight the definition provided.

Table 1: Local Policy Elites and General Population Comparison

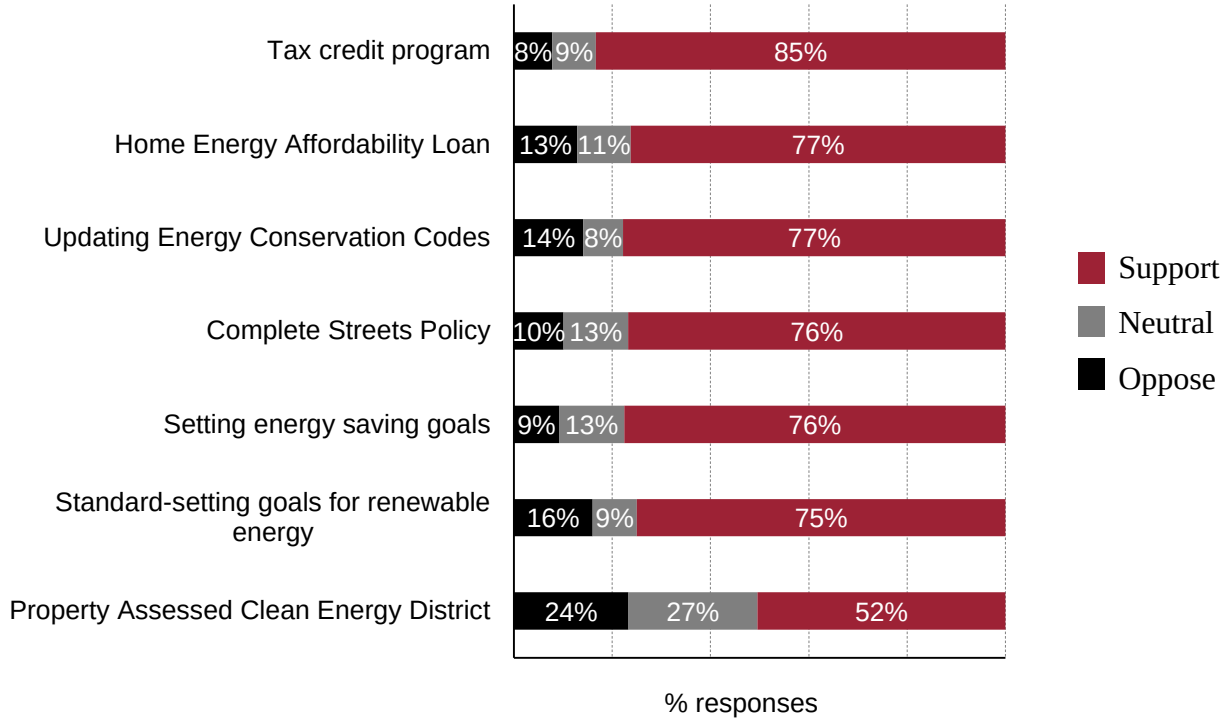
	Arkansas General Population*	**Arkansas Local Policy Elites**
Average Age	55-64	54
Gender		
Male	44%	65%
Female	56%	39%
Educational Attainment		
College Graduate or Above	39%	74%
Median Household Income	$35,001-$50,000	$70,000-$80,000
Race/Ethnicity		
White	81%	92%
African American	9%	1%
Hispanic	1%	0%
Native American	2%	1%
Asian	1%	0%
Sample size (*n*)	747	420

* Source: Parry, J.A. (2014). The Arkansas Poll, 2014 Summary Report. Technical Report. Retrieved from http://plsc.uark.edu/7129.php

When Arkansas local policy elites were asked their opinions on various sustainable energy policy measures (Figure 6; Song et al., 2014a) designed to enhance efficient energy use and increased energy production from renewable energy sources, such as wind, solar, biomass,

and geothermal, in their local government and community on a 7-point scale ranging from 1 (=Strongly oppose) to 7 (=Strongly support), the majority of them were supportive (5 to 7 rating on this 7-point scale) of these policy measures, while their levels of support varied across different policy options, ranging from 85 to 52 percent. A tax credit program for renewable energy or energy conservation received the highest level of support (85%) and the Property Assessed Clean Energy District received the lowest level of support (52%), while other policy options, such as Home Energy Affordability Loan, updating Energy Conservation Codes, Complete Streets Policy, setting energy saving goals, and establishing standard-setting goals for renewable energy, gained support from approximately three quarters of survey respondents. It is noteworthy that about half of survey respondents were either in opposition to (1 to 3 rating on this 7-point scale) or neutral (4 rating on this 7-point scale) towards the policy idea of establishing Property Assessed Clean Energy District, a clean energy district financed through property assessment anchored to property deeds, not individuals, as a means of financing energy efficiency upgrades or renewable energy installations for buildings in their local government and community. The complete survey results can be found in the appendix and online at www.researchgate.net/profile/John_Kester. These preference outcomes show the dynamic nature of policy elites and present the opportunity to examine the potential explanations for why there variation is observed in sustainable energy policy preferences.

Figure 6: Preference Toward Sustainable Energy Policies



Analytical Methods

The survey data was analyzed using multivariate analysis comparing cultural worldviews, demographics, policy contextual variables, political affiliation, and knowledge, and their related impact on the dependent variable of sustainable energy policy preferences. Surveys in cultural theory have produced significant correlations to policy preferences (Verweij, et al., 2011; Song, 2013; Song et al., 2014b). Chronbach alpha scores are included in the analytical chapter tables to substantiate the validity of the cultural theory measures and are within the acceptable range of 0.6 - 0.85 (Song, 2013; Song et al., 2014b). For the survey data, ordinary least square (OLS) regression was employed to test the hypotheses discussed above. (**Note:** A Tobit model was run for the results and they were found to be similar to the OLS regression models reported later in

the dissertation. The Tobit model was run because the nature of the correlation between the variables in this study is unknown and it is important to compare different linear regression model outcomes to ensure the right model is being used to analyze the data. The choice was made to focus on using OLS regression to simplify the format of presenting the data analysis. The Tobit models are available upon request.) Once verifying the conjectured relationship between local policy elites' cultural orientations and preference toward sustainable energy policies, Bayesian posterior simulation was administered to predict the distributions of predicted policy preferences by prototypical cultural type. This form of statistical analysis is appropriate for individual level analysis and allows for a subjective evaluation of probability. Bayesian posterior simulation doesn't require repeated sampling over time and can provide a method to formulating predictions for other situations (Gelman et al, 2014; Honaker & King, 2010; King et al., 2004). The subjective evaluation fits the focus of the study because the dependent variable is subjective and determined by the policy elite's response to the survey questions. Personal beliefs (i.e. cultural worldview) are factors that can impact the posterior simulation. The prior probability hypothesized by previous research in cultural theory preference formation was used alongside the evidence from the research to build the simulation. These observations, *a priori*, can inform hypotheses for future research and further visualize the survey outcomes. The steps for this statistical approach are as follows.

Arkansas local political elites (e.g., mayors, city council members, city planners, and city chamber of commerce members) participated in an online survey via an email invitation. This study posed questions about current policy issues including survey participants' experiences and concerns regarding certain risks and hazards, natural resources and sustainable energy. In the

unlikely event that any of these questions make participants uncomfortable, they were allowed to skip that question and continue with the survey. Participants may also quit the survey at any time, should they desire to do so. The records of this study will be kept private to the extent allowed by law and University policy. In reporting analytical results, there no information was included that would make it possible to identify survey respondents as a research participant. Research records are stored securely. Only approved researchers will have access to the records.

The next chapter begins the analysis portion of the dissertation and builds on the theoretical and methodology explanations to provide a framework for the results and discussion.

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4. Policy Elite Preferences Toward Sustainable Energy Policies in Arkansas

Introduction

Organized energy policy in the United States dates back to 1920 with the enactment of the Federal Water Power Act, which merely encouraged development of hydroelectric projects, not setting out any direct goals or standards for power generation (Robinson, 2014). Prior to this point, regulations and national guidance were limited due to the private sector fulfilling needs, determining pricing policies, and managing the market. This approach continued until the 1970s with some federal acts determining availability of federal loans (e.g. Rural Electrification Act) and establishing authority for regional organizations (Isser, 2015; Robinson, 2014; Tomain, 1990). The concrete infrastructure for tracking energy use and advising on national energy policy at the cabinet level didn't occur until 1977 with the Department of Energy finally taking a leadership role and the Federal Energy Regulatory Commission being established (U. S. Department of Energy, 2015). Energy policy studies have historically been evaluating cost-effectiveness of these policies (Hahn & Stavins, 1992) and the recent literature is now focused on energy efficiency and renewable energy policies and their potential impacts (Carley & Browne, 2013; Hohmeyer & Bohm, 2014; Wing & Jin, 2015). These types of energy policies are associated with providing sources of sustainable energy that can be relied upon to increase energy security while mitigating negative environmental impacts of the use of fossil fuel resources.

The sustainable energy policy focus for this research on energy efficiency and renewable energy options is due to the dearth of adoption of related policies in the southeastern region of the United States, particularly Arkansas, and the need to spur innovation in the respective energy

fields through policy development. Cheap energy and conservative politics are often cited as the main determinants for the lagging nature of sustainable energy policy diffusion in the region (Brown et al., 2012). Without a concentrated demand-side impetus and conducive political landscape, many sustainable energy policy advocates lose motivation to push for adoption. There is an opportunity to further investigate these sustainable energy policies from an alternative standpoint to that of cost-effectiveness, is to look to the origins of policy elite preferences, particularly around worldviews and how this is influencing diffusion.

Theoretical Conjectures

Cultural Theory of Policy Preference Formation

For policy preferences, there is a development from the basis of external social relationships. The individual garners a foundation of preferences, and whatever gaps exist are filled in from macro influences that are derived from the larger society and regional preferences (Wildavsky, 1987). Cultural theory examines the outlook on life and social relationships that forms into value predispositions as a primary indicator for policy preference (Song et al., 2014). This connection to values and worldviews expands the discussion about preferences to consider how an individual's perception of proper social relationships can influence preference formation. Thus, culture and politics are constantly intertwined, contributing to the formation of public policies. Although not a readily available body of information, such as other potential sources of policy preferences (e.g. demographics, party affiliation), cultural worldviews are valuable in predicting and understanding policy adoption. The overarching goal of applying cultural theory in this dissertation is to assess whether or not these values are determining factors for local policy elites in preference formation toward sustainable energy policies in Arkansas cities.

More specifically, strong egalitarian policy elites are expected to believe that the ecosystem is delicate and worry more about the environment and sustainability than any other cultural type (Thompson et al., 1990). They are more concerned about the environment and sustainability, not only because they care for nature, but also because they firmly believe that stringent restrictions on current business practices within the market reduce commercial activities that produce social inequality and the legitimization of unconstrained self-interest (Kahan et al., 2007). Therefore, they are more likely to support and adopt sustainable energy policies in comparison with all other cultural types.

Strong individualist policy elites who are essentially libertarians and strong advocates for free market capitalism are predicted to believe that the ecosystem is quite robust and tend to undervalue any potential harm to the ecosystem generated by economic operations and activities (Thompson et al., 1990). They consider the government's strong environmental regulations not only unnecessary but also costly, and more importantly, a potential threat to their moral basis of *laissez faire*. Therefore, I hypothesize that local policy elites who are solid individualists are reluctant to support and adopt sustainable energy policies.

Policy elites with a strong hierarch tendency would perceive any deviations from *status quo* or any disruptions in established rules and social order as potential threats (Thompson et al., 1990). Although they would deem nature to be fairly resilient when compared to egalitarians, they are inclined to rely upon expert authority in deciding the level of human exploitation that can be forgiven and tolerated by the ecosystem. When dealing particularly with issues regarding environment and sustainability, strong hierarchs are expected to be relatively more unbiased than egalitarians or individualists, unless they perceive any substantial threat or gain to their

preexisting moral order from the introduction of related novel technology or business activities. Therefore, I hypothesize that strong hierarch policy elites' propensity to support and adopt energy efficiency and renewable energy policies would be situated between egalitarians' and individualists'.

Strong fatalists tend to retain a proclivity for merely coping with random events in a perceived unsystematic world, instead of undertaking active involvement in planning, controlling, and managing such events or learning from them (Thompson et al., 1990). Within the same vein, they are reluctant to reveal their attitudes, preferences, and intentions toward any policy issues in comparison with other cultural types. No previous studies reported any significant findings regarding fatalists' attitudes toward environment and sustainability (Jones & Song, 2014; Song & Conner, 2015). Therefore, the literature portrays that strong fatalist policy elites' cultural orientations would not be meaningfully related to their likelihood of supporting and adopting any sustainable energy and environment policies.

Policy Contextual Variables, Political Affiliation, and Demographics

The current landscape of policy diffusion is focused on the exogenous variables (i.e. outside one's belief system) that will direct policy preference formation and the decisionmaking process. The alternative explanations for policy preferences are based upon previous policy diffusion research (Doris et al., 2009; Krause & Mendez, 2005; Shapiro & Mahajan, 1986). The local policy elites were asked how they will choose policies based upon variables such as available budgets, current land use policies, technology accessibility, and levels of public support. These categorizations of policy contextual variables were primarily based on the National Renewable Energy Laboratory Technical Report (Doris et al., 2009) on the role of

policy in renewable energy development. This report presented these categorizations as key factors in determining the likelihood of policy adoption. What is different in this dissertation from past research is that policy elites were asked for their perception of these variables, rather than being assessed through observational data. This will add a component to the policy diffusion discussion about the role perceptions of these variables play in the process, rather than only focusing on descriptive and objective nature.

In addition, political party affiliation, level of knowledge about sustainable energy policy options, and demographics are used as rival explanations in a number of cultural theory articles (Moyer & Song, 2014; Song et al, 2014). The political landscape has already been mentioned in this dissertation as a proposed reason why sustainable energy policy is not successful in the region (Brown et al., 2012). The inclusion of this control variable will allow this analysis to assess whether or not the divide in political parties is clear among policy elites and the strength of the relationship can also be compared to the cultural theory measures. The level of sustainable energy knowledge and demographics are likely to show some connection to sustainable energy policies preferences in the early regression models that are run. For example, more knowledgeable individuals with higher incomes would be in favor of implementing policies that address pressing issues such as energy security and climate change. In past cultural theory research, (Kester III & Song, 2014; Song et al., 2014), models show significance for demographic variables, such as education and income, as being positive indicators for policy preferences regarding increasing sustainable energy policy options and objectively-based policies. The primary focus of the data analysis will be to examine the cultural theory measures

impact on preferences, while the rival explanations and controls offer a way to compare previously researched preference origins and correlated relationships in public policy research.

Data, Variables, and Measures

Survey Data

The policy elites for the statewide Internet survey were from the pool of mayors, city managers, city council representatives, appointed planning officials, and chamber of commerce members in Arkansas cities. The survey was open to policy elites from March 17, 2014 to April 8, 2014 and from July 22, 2014 to August 27, 2014[1]. An email was sent to all available policy elites whose contact information is publicly available through the city websites, which was approximately 2,471. The email included a succinct description of the survey and its intent. The voluntary survey contained 36 substantive questions and was approved by the Institutional Review Board (Appendix). There was the option for recipients of the email to send the survey link to other policy elites. The questions focused on Arkansas energy policy issues, including city level sustainable energy options, high voltage power line installations, cultural worldviews, affective feelings, knowledge of Arkansas energy sources and legislation, trust on information sources, party affiliation, and demographics (Moyer & Song, 2015).

[1] The complete survey results can be found in the appendix and online at https://www.researchgate.net/profile/John_Kester. For context to the data analysis, it is suggested to read through the survey results first.

Table 2: Dependent Variable and Measures

Variable	Measure
Sustainable Energy Policy Preferences	On a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about establishing standard-setting goals for renewable energy, as a means of requiring the increased production of energy from renewable energy sources, such as wind, solar, biomass, and geothermal, in your local government and community? (1=Strongly oppose to 4=Neutral to 7=Strongly support)
	On a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about setting energy saving goals, as a means of requiring reduced energy consumption and increased energy efficiency, in your local government and community? (1=Strongly oppose to 4=Neutral to 7=Strongly support)
	On a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about an adoption of a complete streets policy that requires streets to be planned, designed, operated, and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation, including walking, bikes, and public transportation as well as automobiles in your local government and community? (1=Strongly oppose to 4=Neutral to 7=Strongly support)
	On a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about updating the Energy Conservation Codes for the establishment of minimum design and construction requirements for energy efficiency for new residential construction and renovations in your local government and community? (1=Strongly oppose to 4=Neutral to 7=Strongly support)
	On a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about an adoption of a tax credit program for renewable energy or energy conservation installations on city, commercial, and residential buildings in your local government and community? (1=Strongly oppose to 4=Neutral to 7=Strongly support)

Table 2: Dependent Variables and Measures

Sustainable Energy Policy Preferences	On a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about setting up a Property Assessed Clean Energy District (a clean energy district financed through property assessment anchored to property deeds, not individuals) as a means of financing energy efficiency upgrades or renewable energy installations for buildings in your local government and community? (1=Strongly oppose to 4=Neutral to 7=Strongly support)
	On a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about an adoption of the Home Energy Affordability Loan (or HEAL), a program targeting energy affordability, job creation and greenhouse gas reductions by providing Arkansas businesses with facility audits and zero interest retrofit financing of energy efficiency improvements for their facilities, while providing home audit and retrofit opportunities for up to 100 employees of each participating business, in your local government and community? (1=Strongly oppose to 4=Neutral to 7=Strongly support)
Policy Preference Index	Index of above seven items **(α=0.90)**

(*Note: Questions based upon currently enacted policies in Arkansas and on the American Council for an Energy Efficient Economy City Energy Efficiency Scorecard; Riberio et al., 2015*)

To research and test the above conjectures, a survey was released to city council representatives and chamber of commerce members from major cities in Arkansas. Table 2 displays the measures for preferences toward sustainable energy policy options. The measures (i.e., sustainable energy questions from the survey) are based upon current policies in Arkansas cities, the national American Council for an Energy Efficient Economy City Energy Efficiency Scorecard, and the International City/County Management Association Sustainability Survey. The dissertation survey respondents were asked to rate their degree of opposition to, or support for, seven local level energy efficiency and renewable energy policies (renewable energy standards, energy savings goals, complete streets policy, Energy Conservation Codes, tax credits, Property Assessed Clean Energy program, and the Home Energy Affordability Loan program) on a seven-point scale ranging from 1 (=Strongly oppose) to 7 (=Strongly support). An index was created to represent survey respondents' policy preferences toward sustainable energy policies by taking the mean of these seven survey items. An alpha scalability score for this measure used was .90, which indicates the reliability of the measures in use.

Table 3: Primary Independent Variables and Measures

Variable	Measure
Egalitarianism	Society works best if power is shared equally. (1=Strongly disagree to 7=Strongly agree)
	It is our responsibility to reduce differences in income between the rich and the poor. (1=Strongly disagree to 7=Strongly agree)
	What society needs is a fairness revolution to make the distribution of goods more equal. (1=Strongly disagree to 7=Strongly agree)
Egalitarianism index	Index of above three items **(α=0.78)**
Individualism	We are all better off when we compete as individuals. (1=Strongly disagree to 7=Strongly agree)
	Even the disadvantaged should have to make their own way in the world.(1=Strongly disagree to 7=Strongly agree)
	Even if some people are at a disadvantage, it is best for society to let people succeed or fail on their own. (1=Strongly disagree to 7=Strongly agree)
Individualism index	Index of above three items **(α=0.67)**
Hierarchism	Society is in trouble because people do not obey those in authority. (1=Strongly disagree to 7=Strongly agree)
	The best way to get ahead in life is to do what you are told to do to the best of your abilities. (1=Strongly disagree to 7=Strongly agree)
	Society would be much better off if we imposed strict and swift punishment on those who break the rules. (1=Strongly disagree to 7=Strongly agree)
Hierarchism index	Index of above three items **(α=0.68)**
Fatalism	For the most part, succeeding in life is a matter of chance. (1=Strongly disagree to 7=Strongly agree)
	No matter how hard we try, the course of our lives is largely determined by forces beyond our control. (1=Strongly disagree to 7=Strongly agree)
	Most of the important things that take place in life happen by random chance. (1=Strongly disagree to 7=Strongly agree)
Fatalism index	Index of above three items **(α=0.72)**

Table 3 presents the measures for the primary independent variables in this analysis. The survey questions were designed to assess local policy elite's cultural orientation. The index of questions is derived from previous studies in cultural theory research and were used in previous research (Song, 2013). Factor analysis (with the varimax rotation method) was conducted using the twelve cultural theory measures listed above and, as a result, four latent factors, which parallel with the four distinctive dimensions of the cultural worldviews, were identified with three related cultural theory measures loaded high (i.e., factor loading greater than 0.5) on each factor while loaded low on remaining unrelated factors. Based upon this factor structure, factor scores for each of four latent dimensions (representing each of four cultural orientations) were calculated and used as an index for measuring each cultural orientation. This approach has been used in previous studies (Moyer & Song, 2015). Alpha scalability scores for the survey measures used for cultural theory indices were all in the acceptable range with scores from 0.63 to 0.80, which indicates the reliability of the measures in use. These measures were also compared with the factor analysis which reflected the existence of the four conceptual dimensions in the responses. Other approaches to assesses cultural type have been employed to test the validity of

these cultural orientation measures[2], but this survey research uses the most recent and validated approach (Song et al., 2014).

[2] Cultural Type Self-Identification

Egalitarian	Society today is unfair and corrupt, and my most important contributions are made as a member of a group that promotes justice and equality. Within my group, everyone should play an equal role without differences in rank or authority. It is easy to lose track of what is important, so I have to keep a close eye on the actions of my group. It is not enough to provide equal opportunities; we also have to try to make outcomes more equal.
Individualist	Groups are not all that important to me. I prefer to make my own way in life without having to follow other peoples' rules. Rewards in life should be based on initiative, skill, and hard work, even if that results in inequality. I respect people based on what they do, not the positions or titles they hold. I like relationships that are based on negotiated "give and take," rather than on status. Everyone benefits when individuals are allowed to compete.
Hierarch	I am more comfortable when I know who is, and who is not, a part of my group, and loyalty to the group is important to me. I prefer to know who is in charge and to have clear rules and procedures; those who are in charge should punish those who break the rules. I like to have my responsibilities clearly defined, and I believe people should be rewarded based on the position they hold and their competence. Most of the time, I trust those with authority and expertise to do what is right for society.
Fatalist	Life is unpredictable and I have little control. I have to live by lots of rules, but I don't get to make them. My fate in life is determined mostly by chance. I can't become a member of the groups that make most of the important decisions affecting me. Getting along in life is largely a matter of doing the best I can with what comes my way, so I focus on taking care of myself and the people closest to me.

This table lists the approach to assessing cultural types by asking respondent to self-identify their cultural type from a selection of four scenarios. The cultural measures used in the survey refer to cultural orientations. For example, a cultural type is an egalitarian, and they would have an egalitarianism orientation. This was included in the survey to assess the verifiability of the cultural theory measures that are in practice in current public policy research and make the

A comparison of the self-identification cultural type measures and the cultural orientation measures is included in the following footnote[3].

connection to the cultural types described in the Theoretical Framework chapter. Each of the scenarios presents a worldview that aligns with the cultural indices listed in Table 3.

[3] Cultural Measure Comparison

Cultural Orientation Score / *Cultural Type*	**Mean Hierarchism Score**	**Mean Individualism Score**	**Mean Egalitarianism Score**	**Mean Fatalism Score**
Hierarch	**0.55**	0.01	-0.26	0.12
Individualist	-0.08	**0.23**	-0.12	-0.09
Egalitarian	-0.57	-0.66	**0.82**	-0.05
Fatalist	-0.37	-0.16	0.65	**0.4**

The means that are in bolded text show the similarity between the cultural orientation and cultural type measures. The closer the mean is to the positive value of 1, the more closely related the measures are. For example, the egalitarian mean is 0.82, with lower scores observed for all other indices. This indicates that the cultural type is accurately depicted by the cultural orientation measures.

Table 4: Control Variables and Measures

Variable	Measure
Level of knowledge of energy issues	Most scientists and energy experts agree that the estimates for natural gas reserves in the U.S. have increased since 2001. (0=False; 1=True*)
	Coal-fired electric power plants in Arkansas supply almost three quarters of the state's electricity. (0=False*; 1=True)
	There has been a state decision on the prospective placement of high voltage power lines in Northwest Arkansas. (0=False; 1=True*)
	A state legislation has been proposed to prevent the prospective installation of high voltage power lines in either Arkansas or Missouri. (0=False; 1=True*)
	Independent power producers provide about a quarter of net electricity generation in Arkansas. (0=False; 1=True*)
	Arkansas recently ranked 17th in the nation in terms of total energy consumed per capita. (0=False; 1=True*)
	Biomass supplied all of Arkansas' non-hydroelectric renewable energy resources for electricity generation in 2010. (0=False; 1=True*)
	Most scientists agree that electromagnetic fields from high voltage power lines can increase the risk of leukemia among those living in their proximity. (0=False*; 1=True)
Knowledge index	Index of above eight items (i.e., number of correct answers)
Political Party Affiliation	Democratic, Republican, Independent, Other
Race	1=Non-Hispanic White
Gender	1=Male
Age	Age in years
Education	Level of education (1=Elementary through some high school to 7=Doctorate (of any type))
Income	Total estimated annual household income (1=less than $50,000 to 4=$150,000 or more)

* Correct answer

The knowledge index shown in Table 4 is based upon current trends in sustainable energy-related policies in the survey region. These knowledge questions are based upon

information available from the Arkansas Energy Office and current trends of energy sourcing in the state. The respondents were asked to provide correct responses for eight true-false questions regarding the relevant energy issues in the state of Arkansas. The knowledge index, which is the number of total correct response, with zero indication a low level of energy knowledge and eight indicating a high level of energy knowledge. The accompanying demographic characteristics including race (coded 1 for Non-Hispanic Whites and 0, otherwise), age (age in years), education age (age in years), education (a seven-point scale with higher rating representing higher education level) and income (a four-point rising scale), and party affiliation variables (Democratic, Republican, Independent, Other) are common in social research surveys and have been previously used in the cultural theory research (Song et al., 2014; Song, 2013).

Table 5: Policy Contextual Variables

Variable	Measure of Perceptions
Economic Feasibility	The current budget allows for city investments into energy efficiency and renewable energy projects (1=Strongly disagree to 7=Strongly agree)
	The economic status of the city is conducive to implementing sustainable energy policies. (1=Strongly disagree to 7=Strongly agree)
	There are opportunities to take advantage of cost savings and job creation by implementing sustainable energy policies. (1=Strongly disagree to 7=Strongly agree)
Economic Feasibility Index	Index of above three items **(α=0.90)**
Public Support	There is public support for sustainable energy policies. (1=Strongly disagree to 7=Strongly agree)
Technology Feasibility	The technology for sustainable energy policies is readily accessible, feasible to implement, and cost effective. (1=Strongly disagree to 7=Strongly agree)
Land Use Feasibility	Sustainable energy policies will improve the utility of land being used for commercial, industrial, and residential buildings in the city. (1=Strongly disagree to 7=Strongly agree)

(*Note: Index proposed for analyzing policy elite perceptions of contextual variables. Adapted from National Renewable Energy Laboratory Technical Report on the role of policy in renewable energy development. (Doris et al., 2009)*

Table 5 lists variables of alternative explanations for policy preferences based upon previous policy diffusion research (Doris et al., 2009; Krause & Mendez, 2005; Shapiro & Mahajan, 1986). These are the primary control variables to compare to the influence of the cultural theory measures. The economic feasibility was assessed as an index of three separate questions related to cost savings, available budget, and potential job creation from implementing sustainable energy policies. These were all identified as key components in the National

Renewable Energy Laboratory Technical report. The alpha scores were developed in the same process as described for the other variables and the economic feasibility alpha score observed was .90. This reflects that the construct of economic feasibility as verified in using these separate questions. Public support was based on a straightforward questions about where or not there was public backing for related policies. The technology feasibility measure asked policy elites about the availability and feasibility of technology to support such policies. Lastly, for assessing land use feasibility, policy elites were asked if the policies would improve the utility of land. All of these questions were asked on a 7-point scale (from 1 to 7) with lower scores exhibiting disagreement with the statement and higher scores representing agreement with the statements.

Table 6: Descriptive Statistics

Variable	*n*	Mean	St. Dev.	Min	Max
Sustainable energy policy preference	352	5.30	1.31	1.86	7
Egalitarianism	306	-0.01	1.00	-2.71	2.50
Individualism	306	0.00	1.00	-2.54	2.18
Hierarchism	306	0.00	1.00	-2.30	2.93
Fatalism	306	0.00	1.00	-1.78	2.97
Knowledge	255	3.11	1.31	0	6
Age	420	53.91	13.45	22	87
Education	287	4.56	1.40	2	7
Income	286	2.40	0.93	1	4

Table 7: Frequency Table

Variable	*n*	Category (%)	
Race	286	Non-White (9%)	Non-Hispanic White (91%)
Gender	337	Female (35%)	Male (65%)

The listed variables and measures were captured in the survey. 416 individuals participated in the survey, with 244 complete responses. Tables 6 and 7 provide the descriptive statistics and frequency of groups participating as survey respondents. Because the dominant race represented in the study was non-Hispanic white, there were only two categorizations presented as the distinctions for non-white could not be individually correlated in the data analysis. More males responded to the survey than females.

Empirical Findings

Table 8: OLS Regression Results Sustainable Energy Policy Preferences

	Dependent variable:			
	Sustainable Energy Policy Preference Index			
	(Model 1)	(Model 2)	(Model 3)	(Model 4)
Egalitarian				0.260***
				(0.063)
Individualist				-0.192***
				(0.054)
Hierarch				0.001
				(0.058)
Fatalist				0.088
				(0.055)
Independent			0.457***	0.346**
			(0.145)	(0.143)
Democrat			0.471***	0.206
			(0.151)	(0.158)
Economic Feasibility		0.155***	0.150**	0.115**
		(0.059)	(0.059)	(0.057)
Public Support		0.005	0.005	0.024
		(0.043)	(0.043)	(0.041)

Table 8: OLS Regression Results Sustainable Energy Policy Preferences

Technological Feasibility	0.120***	0.107**	0.082*
	(0.044)	(0.044)	(0.043)
Land Use Feasibility	0.376***	0.344***	0.323***

		(0.044)	(0.044)	(0.043)
Knowledge	0.019	-0.003	-0.004	-0.022
	(0.063)	(0.045)	(0.044)	(0.042)
Race (1=White)	-0.243	-0.124	-0.006	0.037
	(0.283)	(0.200)	(0.206)	(0.196)
Gender (1=Male)	-0.441**	-0.054	-0.058	-0.021
	(0.176)	(0.125)	(0.125)	(0.119)
Age	-0.002	-0.002	-0.007	-0.009*
	(0.007)	(0.005)	(0.005)	(0.005)
Education	0.109*	0.041	0.022	0.008
	(0.059)	(0.041)	(0.041)	(0.041)
Income	-0.266***	-0.138**	-0.120*	-0.050
	(0.092)	(0.065)	(0.067)	(0.065)
Constant	6.004***	2.666***	2.669***	3.052***
	(0.512)	(0.424)	(0.440)	(0.430)
Observations	246	246	228	228
Adjusted R^2	0.058	0.548	0.559	0.604
F Statistic	3.499*** (df = 6; 239)	30.748*** (df = 10; 235)	24.963*** (df = 12; 215)	22.656*** (df = 16; 211)
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 8 presents the results from ordinary least square (OLS) linear regression analysis[4]. The dependent variable, local policy elites' sustainable energy policy preference, is regressed on

[4] A Tobit model was run for the results and they were found to be similar to the OLS regression models reported later in the dissertation. The Tobit model was run because the nature of the correlation between the variables in this study is unknown and it is important to compare different linear regression model outcomes to ensure the right model is being used to analyze the data. Running a tobit model also shows whether or not there could be a left or right censoring dependent variable. Therefore, if the results were different from OLS, it may signify there is a maximum or minimum level of policy preference for sustainable energy policies based on what policies were presented to the respondents. Because the results were similar, the choice was made to focus on using OLS regression to simplify the format of presenting the data analysis.

their demographic characteristics and level of knowledge on general energy issues in Arkansas for Model 1. Policy contextual variables are included in the regression analysis in Model 2, while holding the impact of demographics and level of knowledge constant on the dependent variable. Model 3 includes designated party affiliations based on self-identification. In Model 4, four cultural orientation measures, are included while controlling for the effects of party affiliation, policy contextual variables, knowledge level, and demographic characteristics on the dependent variable.

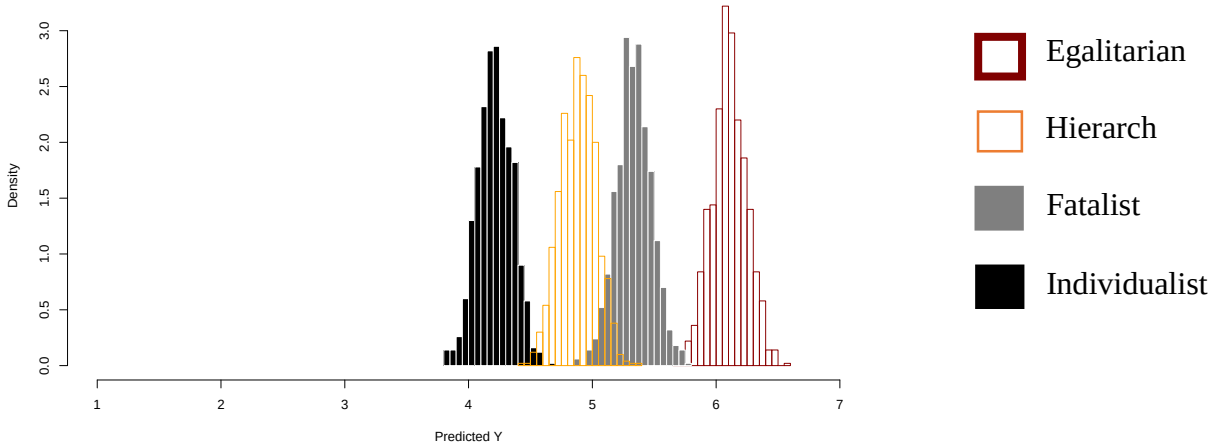
In the first regression (Model 1), Education (0.109, $p < 0.1$) level is positively related to policy elites' support for sustainable energy policies. Gender (Dummy Variable = 1 for Male: -0.441, $p < 0.01$) in Model 1 is negatively related to policy elites' support for sustainable energy policies. Income (-0.266, $p < 0.01$; -0.138, $p < 0.05$; -0.120, $p < 0.10$) is also negatively related to policy elites' support for sustainable energy policies in models 1, 2, and 3. The Knowledge variable was included in Models 2, 3, & 4, the results show that the variable does not explain policy elites' energy policy preference with statistical significance.

In Model 2, by adding the policy contextual measures, the adjusted R^2 value increased from 0.058 to 0.548. The economic feasibility (0.155, $p < 0.01$), technological feasibility (0.120, $p < 0.01$), and land use feasibility (0.376, $p < 0.01$) were all significant in determining the preferences of the policy elites.

In Model 3, Independents (0.457, $p < 0.01$) and Democrats (0.471, $p < 0.01$) exhibited significant support for sustainable energy policies. In Model 4, the Democrat party affiliation didn't hold significance, whereas the Independent variable remained significant (0.346, $p < 0.05$) and continued to show preference for sustainable energy policies.

More specifically for Model 4, strong egalitarians are more likely to support sustainable energy policies (0.260, $p < 0.01$), while strong individualists are less likely to support such policy options (-0.192, $p < 0.01$). There is also no statistical significance observed for hierarchs or fatalists. These results conform to the theoretical conjectures discussed earlier that the egalitarians would favor adopting sustainable energy policies, whereas individualists would not prefer to adopt such policies. By adding the cultural orientation measures, the adjusted R^2 value further increased from 0.559 to 0.604.

Figure 7: Predicted sustainable energy policy preference by cultural type



First, OLS regression models were estimated using the sample from the aforementioned regression analysis. In this parsimonious model, the same dependent variables employed previously (i.e., preference toward sustainable energy policies) were used, but just four cultural measures (i.e., hierarchism, egalitarianism, individualism, and fatalism) serve as explanatory variables. This parsimonious model will be utilized mainly because this analysis will focus on the predictions based on the estimated effects of primary explanatory variables (i.e., hierarchism,

egalitarianism, individualism and fatalism) upon dependent variables (i.e., preference toward sustainable energy policies). Statistical verification of such effects are accomplished through the regression analysis in which major control variables (derived from competing theoretical claims) is included.

Iterative posterior simulation (1,000 times) based upon the estimated parameters and variance-covariance matrix of these parameters acquired from the first step of the analysis were utilized. One thousand different vectors of estimated regression coefficients (including coefficient for intercept term) for each model were obtained using this iterative simulation. Third, by assigning one standard deviation above the mean of a particular cultural orientation index and one standard deviation below the mean of the remaining three cultural orientation indices, a prototype for each of the four cultural orientations was formulated, in reflection of the idea that each cultural type derives its identity both from an affinity for its own particular biases and the rejection of the biases of other cultural types. The mean of each cultural orientation index (i.e., egalitarianism, individualism, hierarchism, and fatalism) is approximately 0 with a standard deviation of 1. Based on this, the prototypical egalitarian was set to be one who scored 0.99 on egalitarianism index (the combined value of egalitarianism mean (= -0.01) and standard deviation (= 1)) and -1 (individualism mean (= 0) minus its standard deviation (= 1)), -1 (hierarchism mean (= 0) minus its standard deviation (= 1)) and -1 (fatalism mean (= 0) minus its standard deviation (= 1)) on indices for hierarchism, egalitarianism and individualism, respectively. Lastly, in order to obtain a distribution of predicted sustainable energy policy preference for the four respective cultural types, I entered the cultural measure values for each

prototypical cultural type (determined in the previous step) into each of the 1,000 different simulated regression equations.

Figure 7 illustrates the response differentiation between the cultural types based on the sustainable energy policy preference index presented in Table 6. Bayesian posterior simulation was used to obtain these results. The solid black histogram represents hierarchs, white outlined in dark red represents egalitarians, white outlined in light orange represents individualists, and solid gray represents fatalists. The vertical axis of the histograms shows the density function of the distribution, while the horizontal axis (Predicted Y) represents either the degree of support for, or level of agreement with, the given policy issue. It is clear that the four cultural types have distinctive sets of preferences based on the posterior simulation. There is some overlap in the preferences, but the degree of support for the preferences varies across the horizontal axis with the egalitarian and individualist being the most diametrically opposed. This mirrors the observations in the OLS regression.

Conclusion and Discussion

The results show that the inclusion of the policy contextual variables, party affiliation, and cultural theory variables increases the explanatory power of the model and regression results based on the survey. Significance is observed in the egalitarian and individualist variables in the final regression model. This affirms the conjectures above in the population sample. The demographic and knowledge variables included in the survey didn't have a significant correlation to determining the sustainable energy policy preferences when cultural orientations were included in the regression analysis. This follows previous cultural theory literature where

the addition of these independent variables displays explanatory power in explaining relationships to policy preferences (Song et al., 2011; Song et al., 2014).

There is a more notable shift in the economic and technological feasibility factors during the regressions and the change in relationship may be explained by the inclusion of the cultural theory variables. The worldviews captured in the survey are indicating the relationships to the policy contextual variables may not be as informative if other origins of policy preferences are considered.

The third regression model includes the party affiliation variables and significance is observed in both measures of Independent and Democrat respondents. In Model 4, the significance for Democrats is no longer observed, and the Independent's positive correlation is diminished. This represents a similar finding to the policy contextual variables where the cultural theory measures provide a complementary function in understanding the nature of policy preferences.

Figure 7 extrapolates the trends from the survey to a larger scale via Bayesian posterior simulation. This form of statistical analysis is appropriate for individual level analysis and allows for a subjective evaluation of probability. Bayesian posterior simulation doesn't require repeated sampling over time and can provide a method to formulating predictions for other situations. The subjective evaluation fits the focus of the study because the dependent variable is subjective and determined by the policy elite's response to interview or survey questions. Personal beliefs (i.e. cultural worldview) are factors that can impact the posterior simulation. The prior probability hypothesized by previous research in cultural theory preference formation is used alongside the evidence from the research to build the simulation. Figure 7 shows that egalitarians and

individualists are the most differentiated (no overlaps between the two histograms) in sustainable energy policy preferences. This aligns with the results from Table 6. Egalitarians would support and adopt energy efficiency and renewable energy policies to a greater degree in comparison with all other cultural types. Individualists are reluctant to support and adopt sustainable energy policies in comparison to other cultural types. Hierarchs would support and adopt energy efficiency and renewable energy policies and is situated between egalitarians' and individualists'.

The previous studies in policy preference formation provided the foundation for the motivation of including the associated variables and for providing an alternative approach to describing the process of policy diffusion related to sustainable energy policy. If further population samples reflect a similar pattern in cultural worldview alignments and associated significance, then the policy diffusion discussion for sustainable energy policy would have reason to consider these orientations when developing policy narratives and strategies.

The primary research limitations for this study are the accuracy of the measurements for the variables assessed in the survey and the available respondents that provided the answers to the survey questions. The proxies for policy elite knowledge related to the proposed policies needs to undergo further verification and validation for future studies so they can accurately portray potential origins of preferences. The knowledge index was developed according to the content focus of the proposed policies in the surveys related to both sustainable energy and the implementation of High Voltage Power Lines. There wasn't a prescribed tool available to assess sustainable energy knowledge and based upon the results of the data analysis and previous

research into impacts of knowledge on policy elite preferences, there needs to be further refinement on how this variable is being assessed.

The pool of survey respondents was also limited in terms of access to elected officials such as mayors, city council representatives, and legislators. These individuals are representative of the policy elite population and it can be difficult to request their time in answering individual survey requests. These policy elites were included in the pool of potential respondents, but their involvement was limited overall. Finding ways to integrate the survey questions into existing policy elite surveys in the state or establishing this survey as an annual research project would help in addressing this research limitation.

Based on findings from the survey, there is a potential correlation between cultural worldviews and sustainable energy policy preferences. The findings supported the conjectures related to individual opinions about nature. From the survey, the support for sustainable energy policy follows previous research patterns in cultural theory related to perceptions of nature and appropriate environmental policies. Future research will expand the survey analysis and be complemented with policy elite interviews to build an in-depth qualitative assessment of this potential relationship.

Advancing beyond centralized explanations fixed in city contextual factors is another prominent goal of the research. The nuances and complexities in the policy setting require further investigation at the individual level. The realization of fundamental links to core cultural beliefs is relevant to motivations for sustainable development and promotion of innovations that fit the bill. Viewing human activities as contributing to our cultural development as well as impacting our natural environment is a big step in coordinating a comprehensive discussion of

what guides decisionmaking (Krizek & Power, 1996). This evaluation revolves back to the original inspection of policy diffusion research, which was to determine the base level environmental and social conditions that lead to adopting a new social phenomenon. This connection brings the research to its theoretical foundations and supports broadening the interdisciplinary spectrum in diffusion research.

The next chapters further refine the scope of the correlations to sustainable energy policies and discuss explanations for the observed relationships based upon policy-specific literature. Sustainable energy policy preference observed were broken down into categories of energy efficiency, renewable energy, incentive-based, and regulatory based policies. There is extensive empirical research looking at each type of related sustainable energy policy type listed, which supports developing robust explanations of expected outcomes for the survey. This depth of research that has been building over the past decades are further refined with the addition of the cultural theory variable as potential influences on related policy preferences.

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5. Policy Elite Preferences Toward Energy Efficiency and Renewable Energy Policies in Arkansas

Introduction

The strategies for figuring out the proper approach to reducing environmental impacts and sustaining natural resources have a close connection to the energy policy discussion. Energy generation and distribution are simultaneously seen as sources of economic opportunity and as concerns for socio-economic and ecological sustainability (Kester et al., 2015). The rise of sustainable energy policy options aim to rectify the social and environmental concerns by providing economically viable to reduced energy use and integrate renewable energy options. Energy efficiency and renewable energy provide paths toward a cleaner energy future. Energy policies concurrently support the use of natural resources and incentivize energy alternatives, mainly through avenues of energy efficiency and renewable energy polices. In order to keep up with societal energy demand, conventional energy resources are relied upon, while energy efficiency and renewable energy integration aim to mitigate the negative externalities of natural resource extraction and provide energy security in the long run. The rationale for focusing on these two aspects of sustainable energy policy is because energy efficiency and renewable energy are seen as complementary in reducing energy consumption, reducing pollution, and cutting down fossil fuel use (Omer, 2007), however renewable energy technologies and policies often experience more barriers to implementation (Dincer, 2000; Painuly, 2000; Tsoutsos & Stamboulis, 2005). The research study is designed to reveal any similarities and differences related to these policy distinctions to see if these barriers exist in Arkansas to renewables and how receptive policy elites are to common energy efficiency measures.

Energy Efficiency and Renewable Energy Policy Preferences

Feedback from presenting the broader sustainable energy policy research (Kester III & Song, 2014) to the public policy academic community was that a more refined analysis of the policy options presented would be more useful to informing sustainable energy policy development. In similar fashion to analyzing the sustainable energy policy options in aggregate, there is a development of preferences for these more specific policy preferences based on interactions and knowledge of the different policy options. The primary difference in these policies, as noted in the introduction to this chapter, is the accompanying barriers to implementation of renewable energy policies. These barriers are further described below and result from perceptions of cost-prohibitive infrastructural investments and limited demand for cleaner, renewable energy at higher prices.

Currently, researchers employ diverse theoretical and methodological approaches in analyzing various facets of the energy policy process ranging from issue framing and agenda setting, to policy formulation and diffusion, and to policy evaluation and feasibility assessment. The following sections on energy efficiency and renewable energy give context to the research focus of this chapter.

Energy Efficiency

Research on energy efficiency primarily includes case studies and comparative policy analyses. The research approaches evaluate the implementation of current energy efficiency policies that have already been adopted. A focus in this sector of energy policy is regulatory measures, such as Energy Resource Efficiency Resource Standards (e.g., Carley 2011; Carley 2012; Carley & Browne, 2013). These standards require utilities to reduce anticipated load with

energy efficiency measures and are mainly adopted at the state level. These standards are directly referenced in the policy survey to provide a straightforward proxy for preferences toward energy efficiency. Success of these standards has varied across the United States and the current research aims to evaluate effectiveness of these standards based on desired outcomes (e.g., Brown, 2014; Foulds & Powell, 2014). The goal of the dissertation research is to identify policy elite preferences associated with the standards for energy efficiency and renewable energy so the policy implementation discussion can be more comprehensive when considering influential factors.

Integrating a cultural theory perspective will contrast the main methodological research for energy efficiency that has been focused on measuring energy intensity changes over time to determine policy effectiveness (Filippini & Hunt, 2010). A desired outcome of the survey research is to exhibit the explanatory nature of cultural theory and associated assessment questions that can lead to an improved understanding of preferred energy efficiency options. This type of research helps expand the frame of reference beyond energy intensity and allows for the scope of energy efficiency research to focus on relevant policy impacts.

In addition to this methodological research, there is an opportunity for informative outreach and communication regarding energy efficiency options. Most people favor limiting use as the best approach to reducing energy consumption (Attari et al., 2010). This method of energy reduction is part of energy efficiency, however there is a misunderstanding of the significant cost savings associated with energy efficiency investments that would reduce energy consumption by having a complementary impact when combined with limiting use. Energy efficiency policies can help provide guidance toward these opportunities. The original state-level survey research

presented here provides a policy elite perspective for supporting energy efficiency. Policy elite preferences are variable and the categorization of cultural worldviews can provide insights into appropriate policy options.

There is a significant opportunity for researching energy efficiency measures that include considerations for policy decision makers and potential sources of information for refining policy options, which this dissertation sets out to discover. The next section continues this narrative of analysis improvement as it relates to renewable energy policy options.

Renewable Energy

Renewable energy continues to gain traction as more policies are put into place to incentivize its production and set goals for increasing use (Kester et al., 2015). Sourcing energy from renewable sources supports energy security and reduces the burden on the planet to provide natural resources that can be extracted for energy purposes. Renewable energy use also leads to less pollution and increased energy security. There are some environmental impacts to support the development of energy infrastructure and storage to support the expansion of renewable energy, but the overall environmental impact is minimized with the opportunity for reliable, sustainable, and long-term energy sources coming within reach.

Despite support for Renewable Portfolio Standards policy implementation, states are inconsistent in implementation and there is a definite need to align goal-setting with incentives to expand renewable energy use (Fischlein & Smith, 2013; Liang & Fiorino, 2013, Schelly, 2014). Dependable research and policy development support was found to lead to successful improvement in innovation and underscored the significance of providing sufficient funding for relevant policies (Liang & Fiorino 2013). This support is crucial because renewables are

currently still on the periphery of the overall energy transmission infrastructure. The opportunity in this research chapter is expanding on this perspective to understand the sources of preferences related to renewable energy policy options that may be impeding implementation. For standards that were stringent and strictly enforced, the governmental ideology drove policy adoption, whereas standards that were voluntary reflected an influence from citizen-level ideologies (Carley & Miller, 2012). The main takeaway from the renewable energy research is the necessity of effective policies to accelerate the ongoing transition to new energy resources and navigate existing hurdles to implementation.

For energy efficiency and renewable energy there are clear examples of success as well as room for improvement. Similar areas for improvement rest in increased utilization of informational databases (e.g., Renewable Energy Portfolio Standard state databases, Homes Energy Efficiency Database), education and outreach, and policy analysis framing. Renewable energy is still limited in opportunities for expansion because of lacking infrastructure and existing preferences for conventional energy sources. Energy efficiency policy options are available and can help bridge the gap to a sustainable energy future as renewable energy options continue to develop.

Theoretical Conjectures

Cultural Theory of Policy Preferences

For this chapter, cultural theory remains the primary theoretical framework for examining the values that inform policy preferences. The goal of applying cultural theory in this chapter is to assess whether or not these values are determining factors for local policy elites in preference formation toward energy efficiency and renewable energy policies in Arkansas cities.

More specifically, renewable energy policies are connected to perceptions of being pricy and inconvenient (Perlaviciute & Steg, 2015). And energy efficiency is touted as the most feasible and immediate energy source for increasing energy security (Hughes, 2009; Kruyt et al., 2009). Even though these policy types seem at opposite spectrums for feasibility, because of their inherent connection to sustainable energy and limiting impacts on nature, I am hypothesizing that the same general cultural theory conjectures will hold true for these policies. I am also expecting some differences in the analysis of the policy contextual factors, such as relative affinity toward energy efficiency policies. These will be discussed in the empirical findings section.

Strong egalitarian policy elites are expected to believe that the ecosystem is delicate and worry more about the environment and sustainability than any other cultural type. Therefore, they are more likely to support and adopt energy efficiency and renewable energy policies in comparison with all other cultural types. It is likely there will be a more positive relationship toward energy efficiency measures based upon the information provided above that relays the affinity of policymakers toward energy efficiency options.

Strong individualist policy elites are predicted to believe that the ecosystem is quite robust and tend to undervalue any potential harm to the ecosystem generated by economic operations and activities. They consider the government's strong environmental regulations not only unnecessary but also costly, and more importantly, a potential threat to their moral basis of *laissez faire*. Therefore, I suspect that local policy elites who are solid individualists are reluctant to support and adopt energy efficiency and renewable energy policies. It is likely their aversion to renewable energy options is more negative because of the perceived challenges to integration.

Strong hierarchs are expected to be relatively more unbiased than egalitarians or individualists, unless they perceive any substantial threat or gain to their preexisting moral order from the introduction of related novel technology or business activities. Therefore, I hypothesize that strong hierarch policy elites' propensity to support and adopt energy efficiency and renewable energy policies would be situated between egalitarians' and individualists'.

No previous studies reported any significant findings regarding fatalists' attitudes toward environment and sustainability and it is expected that there will be no indication of aligned preferences with the energy efficiency and renewable energy analysis focus.

Policy Contextual Variables, Political Affiliation, and Demographics

In the survey data used for the sustainable energy policy research analysis, the local policy elites were asked how they choose policies based upon alternative theoretical variables such as available budgets, current land use policies, technology accessibility, and levels of public support. These categorizations can influence the decision for or against the implementation of energy efficiency and renewable energy policy options. These common policy diffusion variables add a component to the policy diffusion discussion about the role perceptions of these variables play in the process, rather than only focusing on descriptive and objective nature.

In addition, political party affiliation, level of knowledge about energy efficiency and renewable energy policy options, and demographics are alternative explanations used in past cultural theory research (Moyer & Song, 2014; Song et al, 2014). The political landscape has already been mentioned in this dissertation as a proposed reason why any sustainable energy policy is not successful in the region (Brown et al., 2012). The inclusion of this party control variable will allow this analysis to assess whether or not the divide in political parties is clear

among policy elites and the strength of the relationship can also be compared to the cultural theory measures in the framework of energy efficiency and renewable energy options. The level of sustainable energy knowledge and demographics are likely to show some connection to sustainable energy policies preferences in the early regression models that are run. In past cultural theory research, (Kester III & Song, 2014; Song et al., 2014), models show significance for demographic variables, such as education and income, as being positive indicators for policy preferences regarding increasing sustainable energy policy options and objectively-based policies. The primary focus of the data analysis will be to examine the cultural theory measures impact on preferences, while the rival explanations and controls offer a way to compare previously researched preference origins and correlated relationships in public policy research.

Data, Variables, and Measures

Survey Data

The same policy elite data for the statewide Internet survey was used for the analysis of energy efficiency and renewable energy policy preferences[5].

[5] The complete survey results can be found in the appendix and online at https://www.researchgate.net/profile/John_Kester. For context to the data analysis, it is suggested to read through the survey results first.

Table 9: Dependent Variables and Measures

Variable	Measure
Energy Efficiency Policy	On a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about setting energy saving goals, as a means of requiring reduced energy consumption and increased energy efficiency, in your local government and community? (1=Strongly oppose to 4=Neutral to 7=Strongly support)
Renewable Energy Policy	On a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about establishing standard-setting goals for renewable energy, as a means of requiring the increased production of energy from renewable energy sources, such as wind, solar, biomass, and geothermal, in your local government and community? (1=Strongly oppose to 4=Neutral to 7=Strongly support)

Table 9 displays the measures for preferences toward energy efficiency and renewable energy policy options that were pulled from the overall survey responses. The measures provide a clear distinction between standards that have an energy efficiency focus or a renewable energy focus. The dissertation survey respondents were asked to rate their degree of opposition to, or support for, these two options of standards on a seven-point scale ranging from 1 (=Strongly oppose) to 7 (=Strongly support). The separate questions for assessing preferences of energy savings goals and renewable energy standards are considered as representative of policy preferences of local policy elites.

Table 10: Primary Independent Variables and Measures

Variable	Measure
Egalitarianism	Society works best if power is shared equally. (1=Strongly disagree to 7=Strongly agree)
	It is our responsibility to reduce differences in income between the rich and the poor. (1=Strongly disagree to 7=Strongly agree)
	What society needs is a fairness revolution to make the distribution of goods more equal. (1=Strongly disagree to 7=Strongly agree)
Egalitarianism index	Index of above three items **(α=0.78)**
Individualism	We are all better off when we compete as individuals. (1=Strongly disagree to 7=Strongly agree)
	Even the disadvantaged should have to make their own way in the world.(1=Strongly disagree to 7=Strongly agree)
	Even if some people are at a disadvantage, it is best for society to let people succeed or fail on their own. (1=Strongly disagree to 7=Strongly agree)
Individualism index	Index of above three items **(α=0.67)**
Hierarchism	Society is in trouble because people do not obey those in authority. (1=Strongly disagree to 7=Strongly agree)
	The best way to get ahead in life is to do what you are told to do to the best of your abilities. (1=Strongly disagree to 7=Strongly agree)
	Society would be much better off if we imposed strict and swift punishment on those who break the rules. (1=Strongly disagree to 7=Strongly agree)
Hierarchism index	Index of above three items **(α=0.68)**
Fatalism	For the most part, succeeding in life is a matter of chance. (1=Strongly disagree to 7=Strongly agree)
	No matter how hard we try, the course of our lives is largely determined by forces beyond our control. (1=Strongly disagree to 7=Strongly agree)
	Most of the important things that take place in life happen by random chance. (1=Strongly disagree to 7=Strongly agree)
Fatalism index	Index of above three items **(α=0.72)**

Table 10 presents the measures for the primary independent variables in this analysis. The same survey questions were used to assess local policy elite's cultural orientation. Alpha scalability scores, specific to this research analysis on energy efficiency and renewable energy options, for the survey measures used for cultural theory indices were all in the acceptable range with scores from 0.63 to 0.80, which indicates the reliability of the measures in use. These measures were also compared with the factor analysis which reflected the existence of the four conceptual dimensions in the responses.

Table 11: Control Variables and Measures

Variable	Measure
Level of knowledge of energy issues	Most scientists and energy experts agree that the estimates for natural gas reserves in the U.S. have increased since 2001. (0=False; 1=True*)
	Coal-fired electric power plants in Arkansas supply almost three quarters of the state's electricity. (0=False*; 1=True)
	There has been a state decision on the prospective placement of high voltage power lines in Northwest Arkansas. (0=False; 1=True*)
	A state legislation has been proposed to prevent the prospective installation of high voltage power lines in either Arkansas or Missouri. (0=False; 1=True*)
	Independent power producers provide about a quarter of net electricity generation in Arkansas. (0=False; 1=True*)
	Arkansas recently ranked 17th in the nation in terms of total energy consumed per capita. (0=False; 1=True*)
	Biomass supplied all of Arkansas' non-hydroelectric renewable energy resources for electricity generation in 2010. (0=False; 1=True*)
	Most scientists agree that electromagnetic fields from high voltage power lines can increase the risk of leukemia among those living in their proximity. (0=False*; 1=True)
Knowledge index	Index of above eight items (i.e., number of correct answers)
Political Party Affiliation	Democratic, Republican, Independent, Other
Race	1=Non-Hispanic White
Gender	1=Male
Age	Age in years
Education	Level of education (1=Elementary through some high school to 7=Doctorate (of any type))
Income	Total estimated annual household income (1=less than $50,000 to 4=$150,000 or more)

* Correct answer

The knowledge index shown in Table 11 is based upon current trends in sustainable energy-related policies in the survey region. These knowledge questions are based upon information available from the Arkansas Energy Office and current trends of energy sourcing in the state. The accompanying demographic characteristics and party affiliation variables are common in social research surveys and have been previously used in the cultural theory research (Song et al., 2014; Song, 2013).

Table 12: Policy Contextual Variables

Variable	Measure of Perceptions
Economic Feasibility	The current budget allows for city investments into energy efficiency and renewable energy projects (1=Strongly disagree to 7=Strongly agree)
	The economic status of the city is conducive to implementing sustainable energy policies. (1=Strongly disagree to 7=Strongly agree)
	There are opportunities to take advantage of cost savings and job creation by implementing sustainable energy policies. (1=Strongly disagree to 7=Strongly agree)
Economic Feasibility Index	Index of above three items **(α=0.90**
Public Support	There is public support for sustainable energy policies. (1=Strongly disagree to 7=Strongly agree)
Technology Feasibility	The technology for sustainable energy policies is readily accessible, feasible to implement, and cost effective. (1=Strongly disagree to 7=Strongly agree)
Land Use Feasibility	Sustainable energy policies will improve the utility of land being used for commercial, industrial, and residential buildings in the city. (1=Strongly disagree to 7=Strongly agree)

(*Note: Index proposed for analyzing policy elite perceptions of contextual variables. Adapted from National Renewable Energy Laboratory Technical Report on the role of policy in renewable energy development. (Doris et al., 2009))*

Table 12 lists variables of alternative explanations for policy preferences based upon previous policy diffusion research (Doris et al., 2009; Krause & Mendez, 2005; Shapiro & Mahajan, 1986). These are the primary control variables to compare to the influence of the cultural theory measures to alternative explanations of policy diffusion. The same survey data was used to reveal more specific preferences and associated influences on energy efficiency and renewable energy policies.

Table 13: Descriptive Statistics

Variable	*n*	Mean	St. Dev.	Min	Max
Sustainable energy policy preference	352	5.30	1.31	1.86	7
Egalitarianism	306	-0.01	1.00	-2.71	2.50
Individualism	306	0.00	1.00	-2.54	2.18
Hierarchism	306	0.00	1.00	-2.30	2.93
Fatalism	306	0.00	1.00	-1.78	2.97
Knowledge	255	3.11	1.31	0	6
Age	420	53.91	13.45	22	87
Education	287	4.56	1.40	2	7
Income	286	2.40	0.93	1	4

Table 14: Frequency Table

Variable	*n*	Category (%)	
Race	286	Non-White (9%)	Non-Hispanic White (91%)
Gender	337	Female (35%)	Male (65%)

The listed variables and measures were captured in the survey. 416 individuals participated in the survey, with 244 complete responses. Tables 13 and 14 provide the descriptive statistics and frequency of groups participating as survey respondents. Because the dominant

race represented in the study was non-Hispanic white, there were only two categorizations presented as the distinctions for non-white could not be individually correlated in the data analysis. More males responded to the survey than females.

Empirical Findings

Table 15: OLS Regression Results Energy Efficiency Policy Preference Index

	Dependent variable:			
	Energy Efficiency Policy Preference Index			
	(Model 1)	(Model 2)	(Model 3)	(Model 4)
Egalitarian				0.238**
				(0.100)
Individualist				-0.165*
				(0.087)
Hierarch				-0.143
				(0.092)
Fatalist				0.052
				(0.088)
Independent			0.643***	0.495**
			(0.222)	(0.227)
Democrat			0.479**	0.176
			(0.230)	(0.250)
Economic Feasibility		0.107	0.105	0.085
		(0.090)	(0.091)	(0.091)
Public Support		0.022	0.020	0.026
		(0.066)	(0.065)	(0.065)
Technological Feasibility		0.152**	0.148**	0.120*
		(0.067)	(0.067)	(0.068)
Land Use Feasibility		0.499***	0.453***	0.447***
		(0.067)	(0.068)	(0.068)
Knowledge	0.008	-0.026	-0.020	-0.031
	(0.087)	(0.068)	(0.067)	(0.067)

Table 15: OLS Regression Results Energy Efficiency Policy Preference Index

Race (1=White)	-0.344	-0.257	-0.061	-0.021
	(0.389)	(0.305)	(0.315)	(0.311)
Gender (1=Male)	-0.367	0.095	0.073	0.115
	(0.242)	(0.191)	(0.190)	(0.190)
Age	0.001	-0.0001	-0.004	-0.006
	(0.010)	(0.008)	(0.008)	(0.008)
Education	0.136*	0.054	0.026	-0.014
	(0.080)	(0.062)	(0.063)	(0.065)
Income	-0.291**	-0.115	-0.106	-0.055
	(0.126)	(0.099)	(0.103)	(0.104)
Constant	5.926***	1.951***	1.899***	2.383***
	(0.705)	(0.646)	(0.671)	(0.683)
Observations	246	246	228	228
Adjusted R^2	0.022	0.424	0.436	0.451
F Statistic	1.906* (df = 6; 239)	19.022*** (df = 10; 235)	15.595*** (df = 12; 215)	12.633*** (df = 16; 211)
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 15 presents the results from ordinary least square (OLS) linear regression analysis[6]. The dependent variables, local policy elites' energy efficiency preferences are regressed on their demographic characteristics and level of knowledge on general energy issues in Arkansas in Model 1. Policy contextual variables are included in the regression analysis in Model 2, while

[6] A Tobit model was run for the results and they were found to be similar to the OLS regression models reported later in the dissertation. The Tobit model was run because the nature of the correlation between the variables in this study is unknown and it is important to compare different linear regression model outcomes to ensure the right model is being used to analyze the data. Running a tobit model also shows whether or not there could be a left or right censoring dependent variable. Therefore, if the results were different from OLS, it may signify there is a maximum or minimum level of policy preference for sustainable energy policies based on what policies were presented to the respondents. Because the results were similar, the choice was made to focus on using OLS regression to simplify the format of presenting the data analysis.

holding the impact of demographics and level of knowledge constant on the dependent variable. Model 3 includes designated party affiliations based on self-identification. In Model 4, four cultural orientation measures are included while controlling for the effects of party affiliation, policy contextual variables, knowledge level, and demographic characteristics on the dependent variable.

In the first regression (Model 1), Education (0.136, $p < 0.10$) level is positively related to policy elites' support for sustainable energy policies. Income (-0.291, $p < 0.05$) is negatively related to policy elites' support for energy efficiency policies. The Knowledge variable does not explain policy elites' energy policy preference with statistical significance.

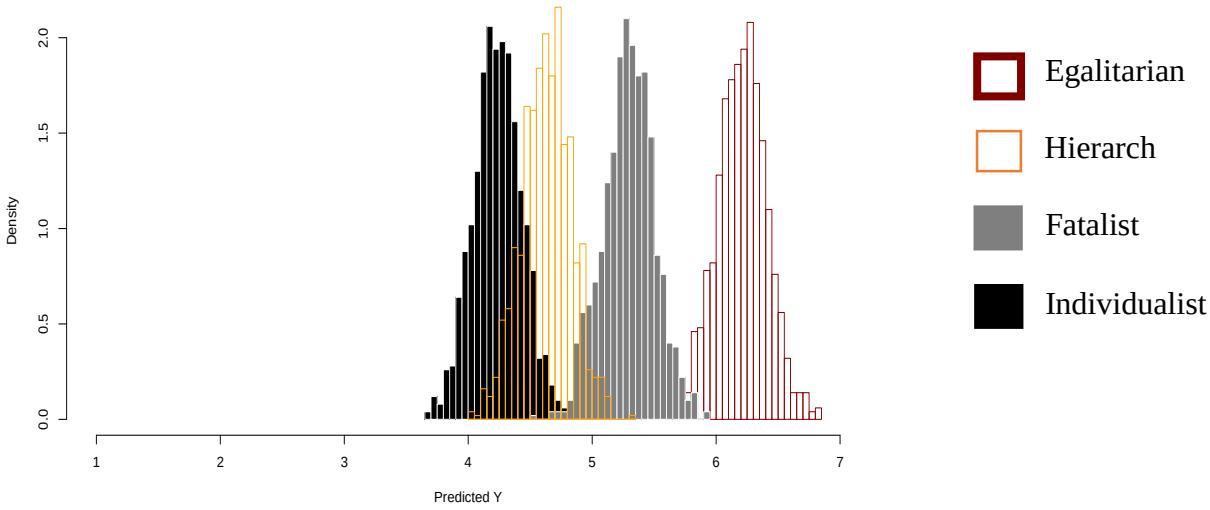
In Model 2, by adding the policy contextual measures, the adjusted R^2 value increased from 0.022 to 0.424. In Models 2, 3, and 4, Technological feasibility (0.152, $p < 0.05$; 0.148, $p < 0.05$; 0.120, $p < 0.05$) and land use feasibility (0.499, $p < 0.01$; 0.453, $p < 0.01$; 0.447, $p < 0.01$) were both significant in determining the preferences of the policy elites.

In Model 3, Independents (0.643, $p < 0.01$) and Democrats (0.479, $p < 0.05$) exhibited significant support for energy efficiency policies. In Model 4, the Democrat party affiliation didn't hold significance, whereas the Independent variable remained significant (0.495, $p < 0.05$) and continued to show preference for energy efficiency policies.

More specifically for Model 4 in Table 15, strong egalitarians are more likely to support energy efficiency policies (0.238, $p < 0.05$), while strong individualists are less likely to support such policy options (-0.165, $p < 0.10$). The relationship to energy efficiency preferences was not significant, however for hierarchs and fatalists. These results conform to the theoretical conjectures discussed earlier that the egalitarians would favor adopting sustainable energy

policies, whereas individualists would not prefer to adopt such policies. By adding the cultural orientation measures, the adjusted R^2 value further increased from 0.447 to 0.479 (Table 21).

Figure 8: Predicted energy efficiency policy preference by cultural type



First, OLS regression models were estimated using the sample from the aforementioned regression analysis[7]. In this parsimonious model, the same dependent variables employed previously (i.e., preference toward sustainable energy policies) were used, but just four cultural measures (i.e., hierarchism, egalitarianism, individualism, and fatalism) serve as explanatory variables. This parsimonious model will be utilized mainly because this analysis will focus on the predictions based on the estimated effects of primary explanatory variables (i.e., hierarchism,

[7] A Tobit model was run for the results and they were found to be similar to the OLS regression models reported later in the dissertation. The Tobit model was run because the nature of the correlation between the variables in this study is unknown and it is important to compare different linear regression model outcomes to ensure the right model is being used to analyze the data. The choice was made to focus on using OLS regression to simplify the format of presenting the data analysis.

egalitarianism, individualism and fatalism) upon dependent variables (i.e., preference toward sustainable energy policies). Statistical verification of such effects are accomplished through the regression analysis in which major control variables (derived from competing theoretical claims) is included.

Iterative posterior simulation (1,000 times) based upon the estimated parameters and variance-covariance matrix of these parameters acquired from the first step of the analysis were utilized. One thousand different vectors of estimated regression coefficients (including coefficient for intercept term) for each model were obtained using this iterative simulation. Third, by assigning one standard deviation above the mean of a particular cultural orientation index and one standard deviation below the mean of the remaining three cultural orientation indices, a prototype for each of the four cultural orientations was formulated, in reflection of the idea that each cultural type derives its identity both from an affinity for its own particular biases and the rejection of the biases of other cultural types. The mean of each cultural orientation index (i.e., egalitarianism, individualism, hierarchism, and fatalism) is approximately 0 with a standard deviation of 1. Based on this, the prototypical egalitarian was set to be one who scored 0.99 on egalitarianism index (the combined value of egalitarianism mean (= -0.01) and standard deviation (= 1)) and -1 (individualism mean (= 0) minus its standard deviation (= 1)), -1 (hierarchism mean (= 0) minus its standard deviation (= 1)) and -1 (fatalism mean (= 0) minus its standard deviation (= 1)) on indices for hierarchism, egalitarianism and individualism, respectively. Lastly, in order to obtain a distribution of predicted sustainable energy policy preference for the four respective cultural types, I entered the cultural measure values for each

prototypical cultural type (determined in the previous step) into each of the 1,000 different simulated regression equations.

Figure 8 illustrates the response differentiation between the cultural orientations based on the policy preference index presented in Table 17. Bayesian posterior simulation was used to obtain these results. The solid black histogram represents hierarchs, white outlined in dark red represents egalitarians, white outlined in light orange represents individualists, and solid gray represents fatalists. The vertical axis of the histograms shows the density function of the distribution, while the horizontal axis (Predicted Y) represents either the degree of support for, or level of agreement with, the given policy issue.

Table 16: OLS Regression Results Renewable Energy Policy Preference Index

	Dependent variable:			
	Renewable Energy Policy Preference Index			
	(Model 1)	(Model 2)	(Model 3)	(Model 4)
Egalitarian				0.302***
				(0.096)
Individualist				-0.217***
				(0.083)
Hierarch				-0.023
				(0.089)
Fatalist				0.164*
				(0.084)
Independent			1.076***	0.931***
			(0.217)	(0.218)
Democrat			0.876***	0.525**
			(0.225)	(0.241)
Economic Feasibility		0.050	0.074	0.028
		(0.088)	(0.089)	(0.088)
Public Support		0.044	0.055	0.075
		(0.065)	(0.064)	(0.062)
Technological Feasibility		0.157**	0.094	0.062
		(0.065)	(0.066)	(0.065)
Land Use Feasibility		0.545***	0.503***	0.483***
		(0.066)	(0.066)	(0.065)

Table 16: OLS Regression Results Renewable Energy Policy Preference Index

Knowledge	0.003	-0.035	-0.042	-0.060
	(0.088)	(0.066)	(0.066)	(0.064)
Race (1=White)	-0.180	-0.134	0.047	0.098
	(0.391)	(0.298)	(0.308)	(0.299)
Gender (1=Male)	-0.495**	-0.021	-0.022	0.022

	(0.244)	(0.186)	(0.186)	(0.182)
Age	0.007	0.006	0.003	0.002
	(0.010)	(0.008)	(0.008)	(0.008)
Education	0.079	-0.006	-0.024	-0.045
	(0.081)	(0.061)	(0.061)	(0.062)
Income	-0.395***	-0.200**	-0.125	-0.045
	(0.127)	(0.097)	(0.100)	(0.099)
Constant	6.286***	2.215***	1.664**	2.152***
	(0.708)	(0.631)	(0.656)	(0.656)
Observations	246	246	228	228
Adjusted R^2	0.043	0.468	0.501	0.531
F Statistic	2.815** (df = 6; 239)	22.581*** (df = 10; 235)	19.965*** (df = 12; 215)	17.051*** (df = 16; 211)
Note:				*p<0.1; **p<0.05; ***p<0.01

In the first regression for Table 16, which examines the results of data analysis for renewable energy policy preferences, (Model 1), Gender (Dummy Variable = 1 for Male: -0.495, $p < 0.05$) is negatively related to policy elites' support for renewable energy policies. In the first and second regressions (Models 1 & 2) Income (-0.395, $p < 0.01$; -0.200, $p < 0.01$) is also negatively related to policy elites' support for renewable energy policies. The Knowledge variable does not explain policy elites' energy policy preference with statistical significance.

In Model 2, by adding the policy contextual measures, the adjusted R^2 value increased from 0.043 to 0.468. Technological feasibility (0.157, $p < 0.05$) and land use feasibility (0.545, $p < 0.01$) were both significant in determining the preferences of the policy elites. Land use feasibility remains a significant variable for the remaining models.

In Model 3, Independents (1.076, $p < 0.01$) and Democrats (0.876, $p < 0.01$) exhibited significant support for sustainable energy policies. In Model 4, the Democrat party affiliation and

the Independent variable remained significant (0.525, $p < 0.05$; 0.931, $p < 0.01$) and continued to show preference for renewable energy policies.

In Model 4 in Table 16, strong egalitarians are more likely to renewable energy policies (0.302, $p < 0.01$), while strong individualists are less likely to support such policy options (-0.217, $p < 0.01$). The relationship to energy efficiency preferences was not significant, however for hierarchs. For fatalists. These results conform to the theoretical conjectures discussed earlier that the egalitarians would favor adopting sustainable energy policies, whereas individualists would not prefer to adopt such policies. By adding the cultural orientation measures, the adjusted R^2 value further increased from 0.501 to 0.531 (Table 23).

Figure 9: Predicted renewable energy policy preference by cultural type

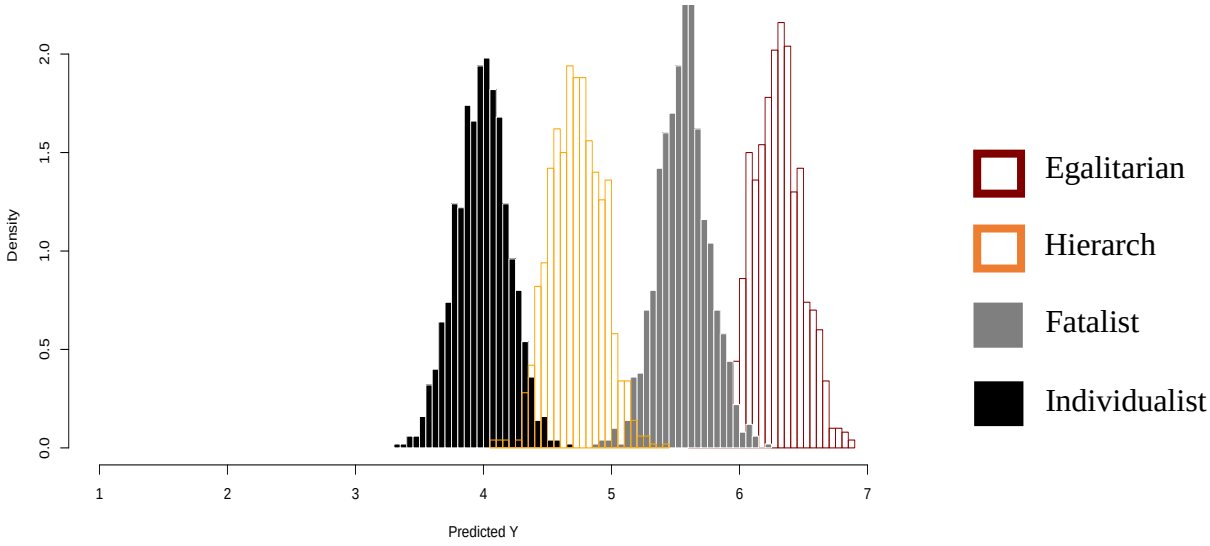


Figure 9 illustrates the response differentiation between the cultural orientations based on the policy preference index presented in Table 16. Bayesian posterior simulation was used to obtain these results. The solid black histogram represents hierarchs, white outlined in dark red represents egalitarians, white outlined in light orange represents individualists, and solid gray represents fatalists. The vertical axis of the histograms shows the density function of the distribution, while the horizontal axis (Predicted Y) represents either the degree of support for, or level of agreement with, the given policy issue.

Conclusion and Discussion

The results from Tables 15 and 16 show that the inclusion of the policy contextual variables, party affiliation, and cultural theory variables increases the explanatory power of the

model and regression results based on the survey. Significance is observed in the egalitarian and individualist variables for renewable energy policies. Significance is only observed for the egalitarian variable for the energy efficiency policies. These relationships affirm the conjectures above for the population sample except that there was a stronger positive relationship toward renewable energy than energy efficiency options for egalitarians. This may suggest that egalitarians are satisfied with current energy efficiency implementation and see more opportunity for progress in sustainable energy by pursuing more renewable sources.

The findings for energy efficiency policy preferences stand out because of the lack of significance for individualist cultural worldviews representing a negative correlation. This is likely due to the conducive nature of energy efficiency policies as they relate to economic cost savings and accepted norms for implementation. This explanation is further supported by the lack of significance for the economic feasibility index that reflected a positive significant relationship.

The demographic and knowledge variables included in the survey didn't have a significant correlation to determining the energy efficiency or renewable energy policy preferences when cultural orientations were included in the regression analysis.

The controlled independent variables not only lose significance, but they all approach a zero value reflecting a neutral orientation based upon this independent variable. This follows previous cultural theory literature where the addition of these independent variables displays explanatory power in explaining relationships to policy preferences (Song et al., 2011; Song et al., 2014).

In the second regression, related policy diffusion variables were included. Technological Feasibility and Land Use Feasibility reflected significance in these models, as well as in the fourth model that included cultural theory variables. This shows that along with the expected conjectures for cultural theory influences, that the perceptions of contextual variables also indicate the preferences policy elites hold toward the proposed energy efficiency and renewable energy policies. The shift in correlation is also noteworthy for the policy contextual variables when the fourth regression is included in Model 4. Technological Feasibility and Land Use Feasibility both decrease in the level of positive correlation toward the dependent variable. The worldviews captured in the survey are indicating the relationships to the policy contextual variables may not be as informative if other origins of policy preferences are considered.

The third regression model includes the party affiliation variables and significance is observed in both measures of Independent and Democrat respondents. In Model 4, the significance for Democrats is no longer observed for energy efficiency policies, but for preferences toward renewable energy policies, it remains significant. This is likely due to the alliance of many democrats to renewable energy as a partisan issue they support (Kohut & Keeter, 2011). In both the energy efficiency and renewable energy OLS regression tables the variables correlation is diminished. This represents a similar finding to the policy contextual variables where the cultural theory measures provide a complementary function in understanding the nature of policy preferences.

Figures 7 and 8 extrapolate the trends from the survey to a larger scale via Bayesian posterior simulation. This form of statistical analysis is appropriate for individual level analysis and allows for a subjective evaluation of probability. The subjective evaluation fits the focus of

the study because the dependent variable is subjective and determined by the policy elite's response to interview or survey questions. Personal beliefs (i.e. cultural worldview) are factors that can impact the posterior simulation. The prior probability hypothesized by previous research in cultural theory preference formation is used alongside the evidence from the research to build the simulation. Figures 7 and 8 show that egalitarians and individualists are the most differentiated (no overlaps between the two histograms) in energy efficiency and renewable energy policies, in similar fashion to the overall sustainable energy policy preferences analyzed in the previous chapter. The conjectures for the policy elite preferences are further reflected in the Bayesian posterior simulation. Egalitarians would support and adopt energy efficiency and renewable energy policies to a greater degree in comparison with all other cultural types. Individualists are reluctant to support and adopt these policies in comparison to other cultural types. Hierarchs would support and adopt energy efficiency and renewable energy policies and is situated between egalitarians' and individualists'.

The previous studies in policy preference formation provided the foundation for the motivation of including the associated variables and for providing an alternative approach to describing the process of policy diffusion related to sustainable energy policy. If further population samples reflect a similar pattern in cultural worldview alignments and associated significance, then the policy diffusion discussion for energy efficiency and renewable energy policies would have reason to consider these orientations when developing policy narratives and strategies.

There needs to be more policy options related to energy efficiency and renewable energy policy options in the research study. These two policy options proposed in the survey may be too

narrow to reflect the overall options related to energy efficiency and renewable energy (Tables 15 and 16). For example, they both exhibit a regulatory type approach to policy implementation.

The primary research limitations for this research also include the accuracy of the measurements for the variables assessed in the survey and the available respondents that provided the answers to the survey questions. The proxies for policy elite knowledge related to the proposed policies need expand beyond the options of energy savings goals and renewable energy standards.

The knowledge index was developed according to the content focus of the proposed policies in the surveys related to both sustainable energy and the implementation of High Voltage Power Lines. There wasn't a prescribed tool available to assess sustainable energy knowledge and based upon the results of the data analysis and previous research into impacts of knowledge on policy elite preferences, there needs to be further refinement on how this variable is being assessed.

The pool of survey respondents was also limited in terms of access to elected officials such as mayors, city council representatives, and legislators. These individuals are representative of the policy elite population and it can be difficult to request their time in answering individual survey requests. These policy elites were included in the pool of potential respondents, but their involvement was limited overall. Finding ways to integrate the survey questions into existing policy elite surveys in the state or establishing this survey as an annual research project would help in addressing this research limitations.

Providing an approach to tailoring policy options to inform where to focus energies and support for sustainability policies is a key outcome to this research. The findings for energy

efficiency policy preferences are highlighted by the lower level of significance for individualist cultural worldviews representing a negative correlation. This is likely due to the conducive nature of energy efficiency policies as they relate to economic cost savings and accepted norms for implementation. This finding is in contrast to the previous analytical chapter where the negative relationship is stronger (-0.192, $p < 0.01$, Table 8; -0.165, $p < 0.10$, Table 15). This explanation is further supported by the lack of significance for the economic feasibility index that reflected a positive significant relationship in all of the other regression analyses. The economic case is clear for energy efficiency options. Example policy recommendations, based on the discussion findings, for advocacy groups would be to continue to encourage energy efficiency policies, while working out the renewable energy policy narrative to broaden the discussion and applicability in the public policy field. Focus on land use benefits whenever possible. For energy efficiency and renewable energy policy options, it is best to accentuate the technological feasibility and land use benefits, rather than spending time on trying to gain public support or substantiating claims of economic feasibility.

Based on findings from the survey, there is a potential correlation between cultural worldviews and more specific sustainable energy policy preferences. From the survey, the support for the energy efficiency and renewable energy policy options follows previous research patterns in cultural theory related to perceptions of nature and appropriate environmental policies. Future research will expand the survey analysis to affirm the findings. The next chapter adjusts the scope of policy types to incentive-based and regulatory policies, another prominent dichotomy in energy policy research.

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6. Policy Elite Preferences Toward Incentive-Based and Regulatory Policies in Arkansas

Introduction

The distinctions of incentive-based and regulatory policies are often used as frameworks for policy discussions across academic and practical fields when determining the most effective approach to achieving policy goals. The consensus is that neither holds all the cards for achieving desired outcomes, however the policy setting and agenda do correlate to the success of the different frameworks (Hahn and Stavins, 1992). Incentive-based energy policy made its first prominent mark in U.S. history with the passage of the National Energy Act in 1978, which included tax incentives and disincentives as they related to oil production (Robinson, 2014). Emissions trading for the acid rain program is another example of an incentive-based policy that was successfully implemented (Tietenberg, 1985). Regulation (e.g. standards, zoning) has also been a policy tactic used in governmental settings (e.g. Public Utilities Regulatory Policies Act) and has seen its fair share of implementation as it relates to sustainable energy (Jaffe & Stavins, 1995; Goulder & Parry, 2008). The reason regulation continues to be considered in the realm of policy options, even with the theoretical benefits of cost-effectiveness related to incentive-based approaches, there is still a need to ensure the proper social distribution of desired benefits (Jaffe et al., 2005; Goulder & Parry, 2008). Even though this balancing effect of policy implementation is acknowledged, there is still policy research that reflects ambiguous impacts from implementing strict regulations for energy policy (Fischer et al., 1998; Jaffe et al., 2002; Ulph, 1998). This analytical chapter examines how the perceptions of policy elites view these two policy types and consider the possible policy recommendations for expanding implementation of sustainable energy policies.

A recent review of energy policy research developments points out the array of policies in energy efficiency, renewable energy, nuclear energy, and fracking (Kester et al., 2015). All of these policy distinctions are typified by two general approaches for achieving policy goals through regulation or incentives. The debate between the effectiveness of the two approaches is a common topic and spurs much of the discussion in environmental politics (Beck & Martinot, 2004; Smith, 2009). Dr. Zachary Smith's thesis in The Environmental Policy Paradox is that solutions to environmental problems exist and we can determine the options that will be most effective, but the hindrance to implementing the available solutions is the nature of the policymaking process (Smith, 2009). There are case studies and policy analyses advocating for each policy approach. Incentive-based policies can be considered as supplements to regulation, but they are often pitted against regulatory options, especially when framed as market-based tools that provide more efficiency than command-and-control approaches to environmental issues.

There is a clear tendency to discount the traditional regulatory framework for addressing environmental issues and because of the political landscape in the south, there is an opportunity to analyze if this trend is continuing to encourage the lack of environmental policies in the region (Steinzor, 1998). The importance of this research chapter is to use the discussion of these dichotomous policy approaches as a framework for a more specific policy analysis of the survey data.

Cultural Theory Conjectures

Cultural Theory of Policy Preferences

Cultural theory is once again applied here to examine the policy elite's value predispositions as primary indicators for policy preferences (Song et al., 2014). For this chapter's survey analysis, the preferences are distinguished from the broad categorization of sustainable energy to that of regulatory-based and incentive-based energy policies. As noted in the introduction to this chapter, there are characteristics of the two policy types that researchers highlight that could lead one option to be the more effective one. Thus, culture is a significant component to consider from the perspective of how worldviews can effect preferences toward these policy types that are different from the policy approaches exhibited by regulation or by providing incentives. The goal of applying cultural theory to this refined survey analysis is to assess whether or not these values are determining factors for local policy elites when deciding between which policy type is the better fit for promoting sustainable energy in the state.

Incentive-based policies are on the rise as an approach to environmental regulation mainly because regulatory approaches are seen as inflexible and encourage compliance rather than pursuing performance. However, since many conventional energy sources cause social and environmental problems, this burgeoning policy scope doesn't lend itself to the market setting and a moral foundation would lead to a more socially acceptable outcome via regulatory policies (Fiorino, 2006). Because of the negative externalities of conventional energy sources and the social imperative to provide clean energy sources, it is likely that egalitarians will favor regulatory options to support sustainable energy. The collective mindset of regulation intentionally setting the parameters for maximum social efficiency is a corollary to the

egalitarian's propensity for social equality. This group is more concerned about the environment and sustainability because they firmly believe that stringent restrictions on current business practices within the market reduces commercial activities that produce social inequality and the legitimization of unconstrained self-interest (Kahan et al., 2007). Therefore, they are more likely to support and adopt regulatory-based policies in comparison with all other cultural types.

The recent shift to market incentives as a primary approach to addressing sustainable energy represents a political paradigmatic shift that may also play a role in determining preferences when comparing incentive-based and regulatory approaches (Driesen, 1998; Markandya et al., 2015). Strong individualist policy elites who advocate free market capitalism consider the government's strong environmental regulations not only unnecessary but also costly, and more importantly, a potential threat to their moral basis of *laissez faire*. Therefore, I hypothesize that local policy elites who are strong individualists to be reluctant in supporting and adopting regulatory-based sustainable energy policies.

The expectation for strong hierarchs to be relatively more unbiased than egalitarians or individualists is likely to hold for this survey analysis. Therefore, I hypothesize that strong hierarch policy elites' propensity to support and adopt regulatory-based and incentive-based policies would be situated between egalitarians' and individualists'.

Strong fatalists are reluctant to reveal their attitudes, preferences, and intentions toward any policy issues in comparison with other cultural types. No previous studies reported any significant findings regarding fatalists' attitudes toward environment and sustainability, let alone more nuanced policy options. Based upon this relationship, the appropriate conjecture is that

strong fatalist policy elites' cultural orientations would not be meaningfully related to their likelihood of supporting and adopting regulatory-based or incentive-based policy options.

Policy Contextual Variables, Political Affiliation, and Demographics

The current landscape of policy diffusion is focused on the exogenous variables (i.e. outside one's belief system) that will direct policy preference formation and the decisionmaking process. The alternative explanations for policy preferences are based upon previous policy diffusion research (Doris et al., 2009; Krause & Mendez, 2005; Shapiro & Mahajan, 1986). The local policy elites were asked how they will choose policies based upon variables such as available budgets, current land use policies, technology accessibility, and levels of public support. These categorizations of policy contextual variables were primarily based on the National Renewable Energy Laboratory Technical Report (Doris et al., 2009) on the role of policy in renewable energy development. This report presented these categorizations as key factors in determining the likelihood of policy adoption. What is different in this dissertation from past research is that policy elites were asked for their perception of these variables, rather than being assessed through observational data. This will add a component to the policy diffusion discussion about the role perceptions of these variables play in the process, rather than only focusing on descriptive and objective nature.

The political nature of the market approach being presented as a Republican favored policy option will likely show more of those politically-aligned with this party to favor the incentive-based policies presented in the survey. The political landscape has already been mentioned in this dissertation as a proposed reason why sustainable energy policy is not successful in the region and it will be valuable to see if this is directed toward these specific

policy types (Brown et al., 2012). In addition to political party affiliation, level of knowledge about policy options and demographics are used again to compare to the impact of the different dependent variables (Moyer & Song, 2014; Song et al, 2014). Based on previous findings (Kester III & Song, 2014), the knowledge variable is not expected to show significant relationships to the observed policy preferences. In past cultural theory research, (Kester III & Song, 2014; Song et al., 2014), models show significance for demographic variables, such as education and income, as being positive indicators for policy preferences regarding increasing sustainable energy policy options and objectively-based policies. It will be interesting to see if these positive connections to the dependent variable vary based upon the presented policy types. The data analysis examines the cultural theory measures impact on preferences, while the rival explanations and controls continue to provide a comparison to previous public policy research.

Data, Variables, and Measures

Survey Data

The information about survey implementation and results are available in the dissertation appendix and online[8].

[8] The complete survey results can be found in the appendix and online at https://www.researchgate.net/profile/John_Kester. For context to the data analysis, it is suggested to read through the survey results first.

Table 17: Dependent Variables and Measures

Variable	Measure
Incentive-Based Policy	On a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about an adoption of a tax credit program for renewable energy or energy conservation installations on city, commercial, and residential buildings in your local government and community? (1=Strongly oppose to 4=Neutral to 7=Strongly support)
	On a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about setting up a Property Assessed Clean Energy District (a clean energy district financed through property assessment anchored to property deeds, not individuals) as a means of financing energy efficiency upgrades or renewable energy installations for buildings in your local government and community? (1=Strongly oppose to 4=Neutral to 7=Strongly support)
	On a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about an adoption of the Home Energy Affordability Loan (or HEAL), a program targeting energy affordability, job creation and greenhouse gas reductions by providing Arkansas businesses with facility audits and zero interest retrofit financing of energy efficiency improvements for their facilities, while providing home audit and retrofit opportunities for up to 100 employees of each participating business, in your local government and community? (1=Strongly oppose to 4=Neutral to 7=Strongly support)
Incentive-Based Policy Preference Index	Index of above three items **(α=0.90)**

Table 17: Dependent Variables and Measures

Regulatory Policy	On a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about establishing standard-setting goals for renewable energy, as a means of requiring the increased production of energy from renewable energy sources, such as wind, solar, biomass, and geothermal, in your local government and community? (1=Strongly oppose to 4=Neutral to 7=Strongly support)
	On a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about setting energy saving goals, as a means of requiring reduced energy consumption and increased energy efficiency, in your local government and community? (1=Strongly oppose to 4=Neutral to 7=Strongly support)
	On a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about an adoption of a complete streets policy that requires streets to be planned, designed, operated, and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation, including walking, bikes, and public transportation as well as automobiles in your local government and community? (1=Strongly oppose to 4=Neutral to 7=Strongly support)
	On a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about updating the Energy Conservation Codes for the establishment of minimum design and construction requirements for energy efficiency for new residential construction and renovations in your local government and community? (1=Strongly oppose to 4=Neutral to 7=Strongly support)
Renewable Energy Policy Preference Index	Index of above four items **(α=0.90)**

Table 17 displays the measures for preferences toward incentive-based and regulatory-based energy policy options. The measures are based upon current policies in Arkansas cities, the national American Council for an Energy Efficient Economy City Energy Efficiency Scorecard, and the International City/County Management Association Sustainability Survey. The survey

respondents were asked to rate their degree of opposition to, or support for, three incentive-based and four regulatory local level sustainable energy policies on a seven-point scale ranging from 1 (=Strongly oppose) to 7 (=Strongly support). An index was created to represent survey respondents' policy preferences toward the incentive-based and another index was created to represent the respondents' policy preferences toward the regulatory policies. An alpha scalability score for these measures used was .90 in both cases, which indicates the reliability of the measures in use. This score was generated from the applying the Chronbach's alpha test in the R program to determine the strength of the estimate for a proposed construct. The constructs in this case are incentive-based and regulatory-based sustainable energy policy preferences of local policy elites and the alpha scores represent the strength of the questions to indicate an individual's preferences.

Table 18: Primary Independent Variables and Measures

Variable	Measure
Egalitarianism	Society works best if power is shared equally. (1=Strongly disagree to 7=Strongly agree)
	It is our responsibility to reduce differences in income between the rich and the poor. (1=Strongly disagree to 7=Strongly agree)
	What society needs is a fairness revolution to make the distribution of goods more equal. (1=Strongly disagree to 7=Strongly agree)
Egalitarianism index	Index of above three items **(α=0.78)**
Individualism	We are all better off when we compete as individuals. (1=Strongly disagree to 7=Strongly agree)
	Even the disadvantaged should have to make their own way in the world.(1=Strongly disagree to 7=Strongly agree)
	Even if some people are at a disadvantage, it is best for society to let people succeed or fail on their own. (1=Strongly disagree to 7=Strongly agree)
Individualism index	Index of above three items **(α=0.67)**
Hierarchism	Society is in trouble because people do not obey those in authority. (1=Strongly disagree to 7=Strongly agree)
	The best way to get ahead in life is to do what you are told to do to the best of your abilities. (1=Strongly disagree to 7=Strongly agree)
	Society would be much better off if we imposed strict and swift punishment on those who break the rules. (1=Strongly disagree to 7=Strongly agree)
Hierarchism index	Index of above three items **(α=0.68)**
Fatalism	For the most part, succeeding in life is a matter of chance. (1=Strongly disagree to 7=Strongly agree)
	No matter how hard we try, the course of our lives is largely determined by forces beyond our control. (1=Strongly disagree to 7=Strongly agree)
	Most of the important things that take place in life happen by random chance. (1=Strongly disagree to 7=Strongly agree)
Fatalism index	Index of above three items **(α=0.72)**

Table 18 presents the measures for the primary independent variables in this analysis. The same survey questions were used to assess local policy elite's cultural orientation. The index of questions is derived from previous studies in cultural theory research and were used in previous research (Song, 2013). Alpha scalability scores for the survey measures used for cultural theory indices were all in the acceptable range with scores from 0.63 to 0.80, which indicates the reliability of the measures in use. These measures were also compared with the factor analysis which reflected the existence of the four conceptual dimensions in the responses.

Table 19: Control Variables and Measures

Variable	Measure
Level of knowledge of energy issues	Most scientists and energy experts agree that the estimates for natural gas reserves in the U.S. have increased since 2001. (0=False; 1=True*)
	Coal-fired electric power plants in Arkansas supply almost three quarters of the state's electricity. (0=False*; 1=True)
	There has been a state decision on the prospective placement of high voltage power lines in Northwest Arkansas. (0=False; 1=True*)
	A state legislation has been proposed to prevent the prospective installation of high voltage power lines in either Arkansas or Missouri. (0=False; 1=True*)
	Independent power producers provide about a quarter of net electricity generation in Arkansas. (0=False; 1=True*)
	Arkansas recently ranked 17th in the nation in terms of total energy consumed per capita. (0=False; 1=True*)
	Biomass supplied all of Arkansas' non-hydroelectric renewable energy resources for electricity generation in 2010. (0=False; 1=True*)
	Most scientists agree that electromagnetic fields from high voltage power lines can increase the risk of leukemia among those living in their proximity. (0=False*; 1=True)
Knowledge index	Index of above eight items (i.e., number of correct answers)
Political Party Affiliation	Democratic, Republican, Independent, Other
Race	1=Non-Hispanic White
Gender	1=Male
Age	Age in years
Education	Level of education (1=Elementary through some high school to 7=Doctorate (of any type))
Income	Total estimated annual household income (1=less than $50,000 to 4=$150,000 or more)

* Correct answer

The knowledge index shown in Table 19 is based upon current trends in sustainable energy-related policies in the survey region. These knowledge questions are based upon information available from the Arkansas Energy Office and current trends of energy sourcing in the state. The accompanying demographic characteristics and party affiliation variables are common in social research surveys and have been previously used in the cultural theory research (Song et al., 2014; Song, 2013).

Table 20: Policy Contextual Variables

Variable	Measure of Perceptions
Economic Feasibility	The current budget allows for city investments into energy efficiency and renewable energy projects (1=Strongly disagree to 7=Strongly agree)
	The economic status of the city is conducive to implementing sustainable energy policies. (1=Strongly disagree to 7=Strongly agree)
	There are opportunities to take advantage of cost savings and job creation by implementing sustainable energy policies. (1=Strongly disagree to 7=Strongly agree)
Economic Feasibility Index	Index of above three items **(α=0.90)**
Public Support	There is public support for sustainable energy policies. (1=Strongly disagree to 7=Strongly agree)
Technology Feasibility	The technology for sustainable energy policies is readily accessible, feasible to implement, and cost effective. (1=Strongly disagree to 7=Strongly agree)
Land Use Feasibility	Sustainable energy policies will improve the utility of land being used for commercial, industrial, and residential buildings in the city. (1=Strongly disagree to 7=Strongly agree)

(*Note: Index proposed for analyzing policy elite perceptions of contextual variables. Adapted from National Renewable Energy Laboratory Technical Report on the role of policy in renewable energy development. (Doris et al., 2009)*

Table 20 lists variables of alternative explanations for policy preferences based upon previous policy diffusion research (Doris et al., 2009; Krause & Mendez, 2005; Shapiro & Mahajan, 1986). These are the same primary control variables used to compare to the influence of the cultural theory measures in the previous survey analysis chapters. The alpha scores were developed in the same process as described for the other variables and the economic feasibility alpha score observed was .90. This reflects that the construct of economic feasibility as verified in using these separate questions as proxies. Public support was based on a straightforward question about whether or not there was public backing for related policies. The technology feasibility measure asked policy elites about the availability and feasibility of technology to support such policies. Lastly, for assessing land use feasibility, policy elites were asked if the policies would improve the utility of land. All of these questions were asked on a 7-point scale (from 1 to 7) with lower scores exhibiting disagreement with the statement and higher scores representing agreement with the statements.

Table 21: Descriptive Statistics

Variable	*n*	Mean	St. Dev.	Min	Max
Sustainable energy policy preference	352	5.30	1.31	1.86	7
Egalitarianism	306	-0.01	1.00	-2.71	2.50
Individualism	306	0.00	1.00	-2.54	2.18
Hierarchism	306	0.00	1.00	-2.30	2.93
Fatalism	306	0.00	1.00	-1.78	2.97
Knowledge	255	3.11	1.31	0	6
Age	420	53.91	13.45	22	87
Education	287	4.56	1.40	2	7
Income	286	2.40	0.93	1	4

Table 22: Frequency Table

Variable	*n*	Category (%)	
Race	286	Non-White (9%)	Non-Hispanic White (91%)
Gender	337	Female (35%)	Male (65%)

The listed variables and measures were captured in the survey. 416 individuals participated in the survey, with 244 complete responses. Tables 21 and 22 provide the descriptive statistics and frequency of groups participating as survey respondents. Because the dominant race represented in the study was non-Hispanic white, there were only two categorizations presented as the distinctions for non-white could not be individually correlated in the data analysis. More males responded to the survey than females.

Empirical Findings

Table 23: OLS Regression Results Incentive-Based Energy Policy Preference Index

	Dependent variable:			
	Incentive-based Sustainable Energy Policy Preference Index			
	(Model 1)	(Model 2)	(Model 3)	(Model 4)
Egalitarian				0.295***
				(0.077)
Individualist				-0.179***
				(0.067)
Hierarch				0.003
				(0.071)
Fatalist				0.007
				(0.067)
Independent			0.286	0.164
			(0.175)	(0.175)
Democrat			0.523***	0.286
			(0.181)	(0.193)
Economic Feasibility		0.192***	0.173**	0.151**
		(0.070)	(0.071)	(0.070)
Public Support		-0.033	-0.027	-0.006
		(0.052)	(0.051)	(0.050)
Technological Feasibility		0.152***	0.148***	0.122**
		(0.052)	(0.053)	(0.052)
Land Use Feasibility		0.296***	0.259***	0.233***
		(0.053)	(0.053)	(0.052)
Race (1=White)	-0.064	0.104	0.210	0.257
	(0.299)	(0.240)	(0.248)	(0.239)
Gender (1=Male)	-0.335*	0.016	0.040	0.071
	(0.186)	(0.150)	(0.150)	(0.146)

Table 23: OLS Regression Results Incentive-Based Energy Policy Preference Index

Age	-0.009	-0.010	-0.016**	-0.018***

	(0.008)	(0.006)	(0.006)	(0.006)
Education	0.089	0.024	0.003	-0.014
	(0.062)	(0.049)	(0.049)	(0.050)
Income	-0.282***	-0.179**	-0.157*	-0.085
	(0.097)	(0.078)	(0.081)	(0.080)
Knowledge	0.044	0.031	0.036	0.014
	(0.067)	(0.053)	(0.053)	(0.051)
Constant	5.934***	2.867***	2.963***	3.354***
	(0.542)	(0.508)	(0.529)	(0.526)
Observations	246	246	228	228
Adjusted R^2	0.048	0.416	0.424	0.465
F Statistic	3.070*** (df = 6; 239)	18.438*** (df = 10; 235)	14.932*** (df = 12; 215)	13.324*** (df = 16; 211)
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 23 presents the results from ordinary least square (OLS) linear regression analysis[9]. The dependent variables, local policy elites' incentive-based policy preferences, are regressed on their demographic characteristics and level of knowledge on general energy issues in Arkansas in Model 1. Policy contextual variables are included in the regression analysis in Model 2, while holding the impact of demographics and level of knowledge constant on the dependent variable. Model 3 includes designated party affiliations based on self-identification. In Model 4, four cultural orientation measures, are included while controlling for the effects of party affiliation,

[9] A Tobit model was run for the results and they were found to be similar to the OLS regression models reported later in the dissertation. The Tobit model was run because the nature of the correlation between the variables in this study is unknown and it is important to compare different linear regression model outcomes to ensure the right model is being used to analyze the data. Running a tobit model also shows whether or not there could be a left or right censoring dependent variable. Therefore, if the results were different from OLS, it may signify there is a maximum or minimum level of policy preference for sustainable energy policies based on what policies were presented to the respondents. Because the results were similar, the choice was made to focus on using OLS regression to simplify the format of presenting the data analysis.

policy contextual variables, knowledge level, and demographic characteristics on the dependent variable.

In the first regression (Model 1), Gender (Dummy Variable = 1 for Male: -0.335, $p <$ 0.10). For Models 1, 2, and 3, Income (-0.282, $p < 0.01$; -0.179, $p < 0.05$; -0.157, $p < 0.10$) is negatively related to policy elites' support for renewable energy policies. Age sees significance in Models 3 and 4, however because none of the previous regression results depict this relationship, it is likely due to multicollinearity of variables. The Knowledge variable does not explain policy elites' energy policy preference with statistical significance.

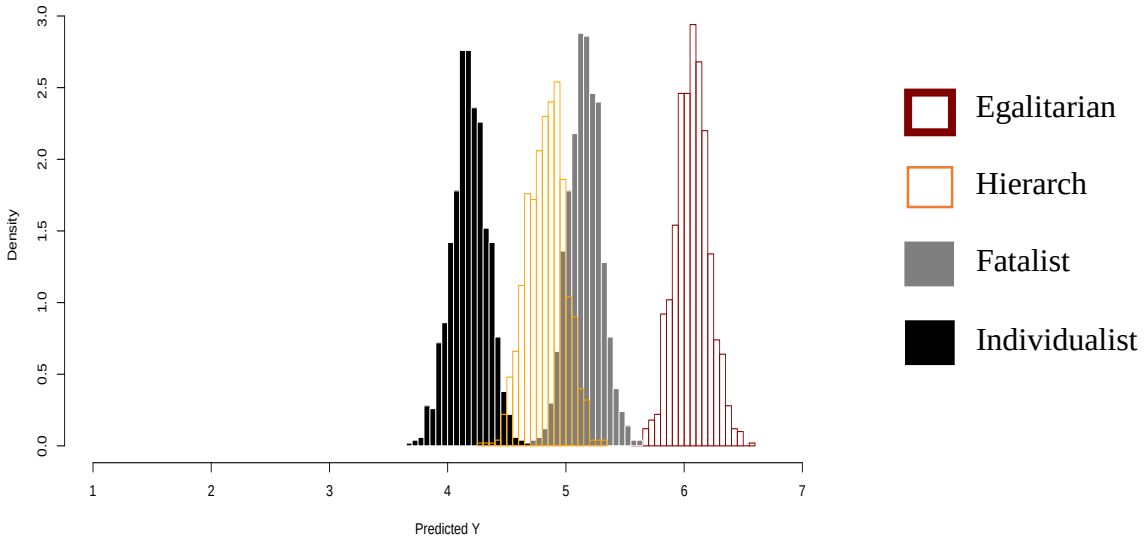
In Model 2, by adding the policy contextual measures, the adjusted R^2 value increased from 0.048 to 0.416. The economic feasibility (0.192, $p < 0.01$), technological feasibility (0.152, $p < 0.01$), and land use feasibility (0.296, $p < 0.01$) were all significant in determining the preferences of the policy elites. These three variables continued to exhibit significance in relationship to preferences toward incentive-based energy policies.

In Model 3, Democrats (0.523, $p < 0.01$) exhibited significant support for sustainable energy policies. In Model 4, the Democrat party affiliation and the Independent variable do not express significance for preference related to incentive-based energy policies.

In Model 4 in Table 23, strong egalitarians are more likely to support sustainable energy policies (0.295, $p < 0.01$), while strong individualists are less likely to support such policy options (-0.179, $p < 0.01$). The relationship to incentive-based preferences was not significant, however for hierarchs. There is also no statistical significance observed for fatalists. These results conform to the theoretical conjectures discussed earlier that the egalitarians would favor adopting sustainable energy policies, whereas individualists would not prefer to adopt such

policies. By adding the cultural orientation measures, the adjusted R^2 value further increased from 0.424 to 0.465 (Table 23).

Figure 10: Predicted incentive-based sustainable energy policy preference by cultural type



First, OLS regression models were estimated using the sample from the aforementioned regression analysis. In this parsimonious model, the same dependent variables employed previously (i.e., preference toward sustainable energy policies) were used, but just four cultural measures (i.e., hierarchism, egalitarianism, individualism, and fatalism) serve as explanatory variables. This parsimonious model will be utilized mainly because this analysis will focus on the predictions based on the estimated effects of primary explanatory variables (i.e., hierarchism, egalitarianism, individualism and fatalism) upon dependent variables (i.e., preference toward sustainable energy policies). Statistical verification of such effects are accomplished through the regression analysis in which major control variables (derived from competing theoretical claims) is included. Iterative posterior simulation was applied again to illustrate predicted trends. Figure

10 illustrates the response differentiation between the cultural orientations based on the policy preference index presented in Table 23. Bayesian posterior simulation was used to obtain these results. The solid black histogram represents hierarchs, white outlined in dark red represents egalitarians, white outlined in light orange represents individualists, and solid gray represents fatalists. The vertical axis of the histograms shows the density function of the distribution, while the horizontal axis (Predicted Y) represents either the degree of support for, or level of agreement with, the given policy issue.

Table 24: OLS Regression Results Regulatory Energy Policy Preference Index

	Dependent variable:			
	Regulatory Sustainable Energy Policy Preference Index			
	(Model 1)	(Model 2)	(Model 3)	(Model 4)
Egalitarian				0.234***
				(0.069)
Individualist				-0.202***
				(0.060)
Hierarch				-0.001
				(0.064)
Fatalist				0.149**
				(0.061)
Independent			0.586***	0.482***
			(0.159)	(0.157)
Democrat			0.431***	0.146
			(0.164)	(0.173)
Economic Feasibility		0.127**	0.132**	0.088
		(0.063)	(0.065)	(0.063)
Public Support		0.033	0.029	0.047
		(0.047)	(0.047)	(0.045)
Technological Feasibility		0.097**	0.076	0.053
		(0.047)	(0.048)	(0.047)

Table 24: OLS Regression Results Regulatory Energy Policy Preference Index

Land Use Feasibility		0.436***	0.408***	0.390***
		(0.048)	(0.048)	(0.047)
Knowledge	0.001	-0.029	-0.035	-0.049
	(0.068)	(0.048)	(0.048)	(0.046)
Race (1=White)	-0.377	-0.295	-0.169	-0.127
	(0.304)	(0.216)	(0.225)	(0.215)

Gender (1=Male)	-0.520***	-0.107	-0.132	-0.090
	(0.189)	(0.135)	(0.136)	(0.131)
Age	0.004	0.003	0.0004	-0.001
	(0.008)	(0.005)	(0.006)	(0.006)
Education	0.125**	0.053	0.037	0.024
	(0.063)	(0.044)	(0.045)	(0.045)
Income	-0.255**	-0.108	-0.092	-0.024
	(0.099)	(0.070)	(0.073)	(0.072)
Constant	6.057***	2.515***	2.448***	2.825***
	(0.550)	(0.457)	(0.480)	(0.472)
Observations	246	246	228	228
Adjusted R^2	0.056	0.544	0.551	0.591
F Statistic	3.408*** (df = 6; 239)	30.221*** (df = 10; 235)	24.186*** (df = 12; 215)	21.523*** (df = 16; 211)
Note:				*p<0.1; **p<0.05; ***p<0.01

In the first regression (Models 1 & 2; Table 27), Education (0.125, $p < 0.05$) level is positively related to policy elites' support for regulatory policies. Gender (Dummy Variable = 1 for Male: -0.520, $p < 0.01$) and Income (-0.255, $p < 0.05$) are negatively related to policy elites' support for regulatory-based policies. The Knowledge variable does not explain policy elites' energy policy preference with statistical significance.

In Model 2, by adding the policy contextual measures, the adjusted R^2 value increased from 0.056 to 0.544. Economic feasibility (0.127, $p < 0.05$), technological feasibility (0.097, $p < 0.05$) and land use feasibility (0.436, $p < 0.01$) were all significant in determining the preferences of the policy elites.

In Model 3, Independents (0.586, $p < 0.01$) and Democrats (0.431, $p < 0.01$) exhibited significant support for regulatory-based policies. In Model 4, the Democrat party affiliation didn't hold significance, whereas the Independent variable remained significant (0.482, $p < 0.01$) and continued to show preference for regulatory-based policies.

In Model 4 in Table 24, strong egalitarians are more likely to support regulatory-based energy policies (0.182, $p < 0.01$), while strong individualists are less likely to support this policy approach (-0.119, $p < 0.1$). Strong hierarchs are prone to support various energy efficiency and renewable energy policies (-0.003) with their degree of support being situated between egalitarians' and individualists'. The relationship to regulatory-based preferences was not significant, however for hierarchs. There is also no statistical significance observed for fatalists. These results conform to the theoretical conjectures discussed earlier that the egalitarians would be more favorable toward the regulatory approach. There is still a positive correlation toward incentive-base policies. Individualists would not prefer to adopt either policy option. By adding the cultural orientation measures, the adjusted R^2 value further increased from 0.447 to 0.479 (Table 24).

Figure 11: Predicted regulatory sustainable energy policy preference by cultural type

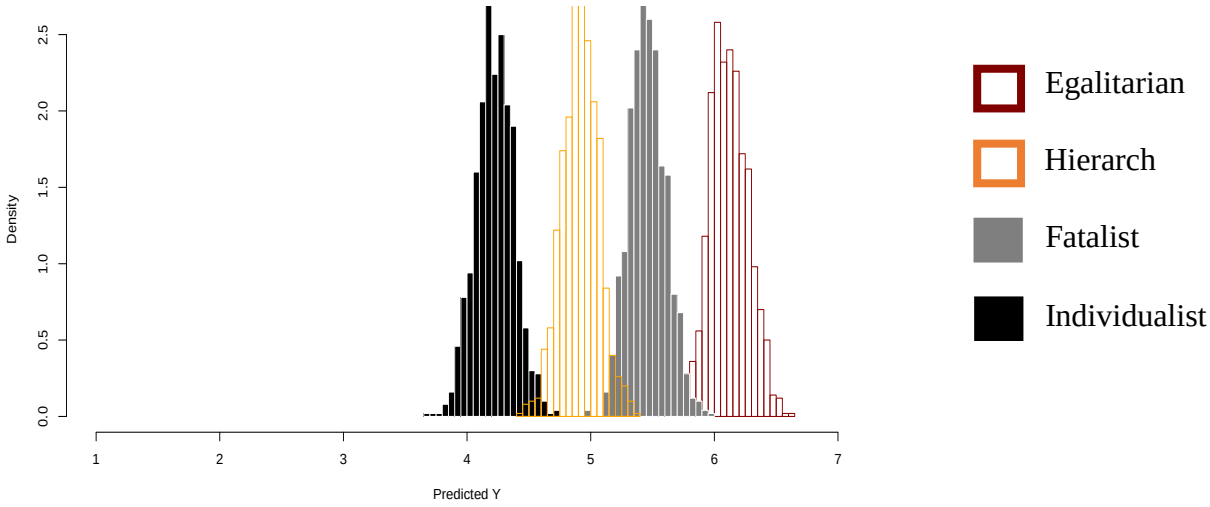

Density
0.0
0.5
1.0
1.5
2.0
2.5
1
2
3
4
5
6
7
Predicted Y
Egalitarian
Hierarch
Fatalist
Individualist

Figure 11 illustrates the response differentiation between the cultural orientations based on the policy preference index presented in Table 17. Bayesian posterior simulation was used to obtain these results. The solid black histogram represents hierarchs, white outlined in dark red represents egalitarians, white outlined in light orange represents individualists, and solid gray represents fatalists. The vertical axis of the histograms shows the density function of the distribution, while the horizontal axis (Predicted Y) represents either the degree of support for, or level of agreement with, the given policy issue.

Conclusion and Discussion

The results from Table 23 and 24 show that the inclusion of the policy contextual variables and cultural theory variables increases the explanatory power of the model and regression results based on the survey. Significance is observed in the Egalitarian and Individualist variables. This affirms the conjectures above in the population sample. The demographic and knowledge variables included in the survey didn't have a significant correlation to determining the energy policy preferences presented when cultural orientations were included in the regression analysis. The findings for both policy preferences standout because of the continued observation for individualist cultural worldviews representing a negative correlation, even for incentive-based policies that promote the use of market tools to encourage policy implementation. This could be due to the overall aversion of individualists to environmental policies and sustainable energy policies, observed in previous chapters. This explanation is further supported by the level of significance and similar negative relationship from the first analytical chapter (-0.192, $p < 0.01$, Table 9; -0.179, $p < 0.01$, Table 26).

Figures 10 and 11 extrapolate the trends from the survey to a larger scale via Bayesian posterior simulation. This form of statistical analysis is appropriate for individual level analysis and allows for a subjective evaluation of probability. The subjective evaluation fits the focus of the study because the dependent variable is subjective and determined by the policy elite's response to interview or survey questions. Personal beliefs (i.e. cultural worldview) are factors that can impact the posterior simulation. The prior probability hypothesized by previous research in cultural theory preference formation is used alongside the evidence from the research to build the simulation. Figures 10 and 11 show that egalitarians and individualists are the most differentiated (no overlaps between the two histograms) in policy preferences. The conjectures for the policy elite preferences are further reflected in the Bayesian posterior simulation. Egalitarians would support and adopt incentive-based and regulatory sustainable energy policies to a greater degree in comparison with all other cultural types. Individualists are reluctant to support and adopt either of the sustainable energy policies in comparison to other cultural types. There is more aversion toward regulatory-based policy options as expected since this approach doesn't align with values of individualists. The overall reluctance could indicate that the sustainable energy nature of the policy options is more significant in determining the preference formation. However, it is still useful to see that incentive-based options will likely bring more individualists to the discussion. Hierarchs would support and adopt energy efficiency and renewable energy policies and is situated between egalitarians' and individualists'.

The previous studies in policy preference formation provided the foundation for the motivation of including the associated variables and for providing an alternative approach to describing the process of policy diffusion related to these debated policy approaches. If further

population samples reflect a similar pattern in cultural worldview alignments and associated significance, then the policy diffusion discussion for sustainable energy policy would have reason to consider these orientations when developing policy narratives and strategies.

The primary research limitations for this research are the accuracy of the measurements for the variables assessed in the survey and the available respondents that provided the answers to the survey questions. The proxies for policy elite knowledge related to the proposed policies needs to undergo further verification and validation for future studies so they can accurately portray potential origins of preferences.

The knowledge index was developed ad hoc according to the content focus of the proposed policies in the surveys related to both sustainable energy and the implementation of High Voltage Power Lines. There wasn't a prescribed tool available to assess sustainable energy knowledge and based upon the results of the data analysis and previous research into impacts of knowledge on policy elite preferences, there needs to be further refinement on how this variable is being assessed.

The pool of survey respondents was also limited in terms of access to elected officials such as mayors, city council representatives, and legislators. These individuals are representative of the policy elite population and it can be difficult to request their time in answering individual survey requests. These policy elites were included in the pool of potential respondents, but their involvement was limited overall. Finding ways to integrate the survey questions into existing policy elite surveys in the state or establishing this survey as an annual research project would help in addressing this research limitations.

Possible policy recommendations based on the regression results, when considering regulatory policies, it is crucial to develop compelling narratives and to pinpoint the land use benefits. The other policy contextual variables are not significant according to the empirical analysis and advocacy resources could be prioritized. Because of the nature of incentive-based policies to guide the market, there may be less associated need to predetermine land use feasibility as a prerequisite since the market is relied on to find the best location or adapt to the physical setting in order take advantage of the potential benefits. Incentive-based approaches can benefit from appropriate cultural worldview narratives and further substantiation of the economic and technological feasibility of the policies.

Based on findings from the survey, there is indeed a potential correlation between cultural worldviews and incentive-based and regulatory policy preferences. The findings supported the conjectures related to individual opinions about nature. From the survey, the support for sustainable energy policy follows previous research patterns in cultural theory related to perceptions of nature and appropriate environmental policies. This empirical chapter concludes the data analysis results from the research and the conclusion chapter will follow to round out the discussion provided thus far.

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7. Conclusion

The primary benefit of this dissertation research is the original dataset collected for the state of Arkansas that can be reexamined and built upon for future analysis of sustainable energy policy preferences. Many studies in the realm of public policy focus on reviewing current statewide, regional, and nationwide datasets and applying a policy diffusion framework using a policy change theory (e.g. Punctuated Equilibrium, Advocacy Coalition Framework, Institutional Analysis and Development Framework) lens. These studies also tend to analyze public opinion data, which is different from assessing viewpoints of policy elites. This state-specific, original dataset will be an ongoing focus for future research into policy elite preferences and in the following discussion sections I will detail how the findings can be used currently and who would best benefit in the local policy arena in Arkansas cities. I also detail future plans for issuing the survey again in the state and potential adaptations for the surrounding region. The final section of the conclusion comments on the overall dynamics of the sustainable energy setting and the potential impacts of the social research in the public policy field.

Application of Findings

The two areas where the findings can be applied are in the theoretical and practical realms of public policy. The following sections summarize the current state of the theoretical landscape and offer practical policy recommendations based upon the comparison of the empirical chapter results.

Theoretical Contributions

The theoretical impetus for the dissertation research was to include novel cultural theory applications and propose implication for the broader framework beyond the policy diffusion context. The goal is to build an understanding that the diffusion process is not solely influenced by communication mediums and geographic differences (Blaikie, 1975; Demerath, 1976; Weinstein, 1976). Policy diffusion research is dominated by a spatial and informational perspective and the survey results analyzed in this research study show that there is more to the story of transitioning policies to new locales. The addition of cultural theory measures to the model increased the strength of the relationship observed when controlling for previously studies variables (e.g. demographics, policy context, party affiliation). This indicates that intrinsic values hold weight in the discussion about sources of policy preferences as well as guidance for how to develop a proper policy narrative. The message for applying a theoretical framework to future data analysis is that the policy contextual variables are important to consider, however there is more to the story when determining what factors are influencing policy diffusion. Cultural theory helps paint a more complete picture of the policy setting, especially the characteristics of the individual policy elite, which often goes overlooked in policy diffusion research (Brown, 1981). The approach of enlightening people with data and knowledge about the topic should be accompanied by a culturally-nuanced approach.

Current research in applications of cultural theory to the public policy setting illustrate its explanatory power and capacity to provide rigor to constructing values as they relate to policy development and adoption (Jacoby, 2014; Jones, 2014; Ney & Verweij, 2014; Robinson, 2014). Previous research has focused on healthcare, economic, environmental, and national security

policies (Jenkins-Smith, 2014). Beyond the theoretical scope, the latest cultural research studies provide methodological insights for including alternative explanations in the scope of the study to show the applicability of cultural theory variables in explaining relationships between policy preference independent and dependent variables (Song et al., 2014). There is additionally an opportunity to expand research at the policy elite level. Most of the current survey approaches look at public perceptions related to policies (LaChappelle et al., 2014).

The dissertation research doesn't necessarily challenge the current understandings in cultural theory and policy diffusion, instead it complements the underpinnings of the theoretical frameworks and opens new avenues of research design and focus in the public policy setting of sustainable energy options. To summarize, cultural worldviews matter when it comes to sustainable energy policy, and these should be considered when developing policy narratives and implementation strategies in concurrence with adapting to the policy context.

Analytical Chapter Comparison and Practical Applications

Similar trends were observed across the empirical chapters in terms of the positive and negative correlations between the independent and dependent variables. This indicates that the policies when broken-down are still related to the overarching framework of sustainable energy, which is a good representation and alignment to the goals of the proxy for policy preferences. However, it makes it difficult to parse out specific policy recommendations. There are still noticeable changes in variable correlations based upon alterations in the regression models presented in the analytical chapters that can be used to suggest potential policy recommendations related to sustainable energy options, such as energy efficiency and renewable energy, and regulatory-based and incentive-based policies.

The land use feasibility factor held the strongest positive correlation to sustainable energy policy preferences in every empirical analysis. The level of agreement that sustainable energy policies will improve the utility of land being used for commercial, industrial, and residential buildings in the city signified the highest level of correlation to the dependent variable in every model that included the policy contextual variable. Thus, if a policy elite believed this was the case, than any sustainable energy policy option was more likely to be preferred. Land use correlation was lower for the incentive-based policies, but still represented a high level of significance. Because of the nature of incentive-based policies to guide the market, there may be less associated need to predetermine land use feasibility as a prerequisite since the market will find the best location or adapt to the physical setting in order take advantage of the potential benefits.

The findings for energy efficiency policy preferences standout because of the lack of significance for individualist cultural worldviews representing a negative correlation. This is likely due to the conducive nature of energy efficiency policies as they relate to economic cost savings and accepted norms for implementation from an individualist perspective. This explanation is further supported by the lack of significance for the economic feasibility index that reflected a positive significant relationship in all of the other regression analyses. Furthermore, there is a price inelastic behavior regarding energy usage that may also influence this empirical result (Asensio and Delmas, 2015). Because of the strong relationship of individualist and market solutions, it is likely the more tangible economic savings from energy efficiency drive the observed relationships.

Further policy recommendations would be to continue to encourage energy efficiency policies, while working out the renewable energy policy narrative to broaden the discussion and applicability in the public policy field. Focus on land use benefits whenever possible. For energy efficiency and renewable energy policy options, it is best to focus on the technological feasibility and land use benefits, rather than spending time trying to gain public support or supporting claims of economic feasibility. When considering regulatory policies, it is crucial to develop compelling narratives and to pinpoint the land use benefits. The other policy contextual variables are not significant according to the empirical analysis and advocacy resources could be prioritized in this situation.

Since there is no significance observed for demographic variables in the final model regressions in the empirical chapters, there isn't sufficient evidence to make any policy recommendations based upon demographic information.

These policy recommendations are based upon the variables and measures used in the research study and should be filtered accordingly by policy groups. The most significant outcome is offering a starting point for discussions and strategy development.

Presentations and Relevant Policy Groups

To date, I have presented at the Southern Political Science Association, Midwest Political Science Association, American Political Science Association, and Association for Public Policy Analysis and Management annual meetings to share this dissertation research. I will continue to apply to present at future meetings to share the final outcomes and findings from the expanded empirical analysis provided in the dissertation. I look forward to these opportunities and

displaying how I have adapted my approach according to feedback from previous panel participation.

In addition to the national stage, I had the chance to present during the winter quarterly meeting for the Fayetteville Forward Green Economy Group where I shared a broad policy report based upon the survey findings. During this meeting, I was approached by the Arkansas Advanced Energy Association, the OMNI Center for Peace, Justice, and Ecology, and the local chapter of the Citizens Climate Lobby for further information about the policy survey. I plan to follow up with each of these groups to provide a finalized report that provides potential policy recommendations based upon the initial findings of my research. The source of preferences for individual public actors serves as a useful determining factor for proper framing of policy narratives and options. I sincerely hope the local advocacy groups and organizations can benefit from the research. In the interest of continuous improvement to fulfilling this desired outcome, I will now outline a set of proposed methodological improvements for future iterations of the survey.

Methodological Improvements

Methodological improvements will address the following research limitations. The primary research limitations for this research are the accuracy of the measurements for the variables assessed in the survey and the available respondents that provided the answers to the survey questions. The proxies for policy elite knowledge related to the proposed policies needs to undergo further verification and validation for future studies so they can accurately portray potential origins of preferences.

The knowledge index was developed ad hoc according to the content focus of the proposed policies in the surveys related to both sustainable energy and the implementation of High Voltage Power Lines. There wasn't a prescribed tool available to assess sustainable energy knowledge and based upon the results of the data analysis and previous research into impacts of knowledge on policy elite preferences, there needs to be further refinement on how this variable is being assessed.

The pool of survey respondents was also limited in terms of access to elected officials such as mayors, city council representatives, and legislators. These individuals are representative of the policy elite population and it can be difficult to request their time in answering individual survey requests. These policy elites were included in the pool of potential respondents, but their involvement was limited overall. Finding ways to integrate the survey questions into existing policy elite surveys in the state or establishing this survey as an annual research project would help in addressing this research limitations.

Use for diverse policy options to represent energy efficiency, renewable energy, incentive-based, and regulatory policies. In a future survey, the scope of data analysis will be better supported with distinguishable policy options within the sustainable energy policy spectrum. As mentioned in the introduction chapter, the academic and professional community represented at the public policy and political science conferences requested focusing in policy context to garner informed policy strategies for specific policy options.

Even the perfect survey will only yield useful applications if the explanations and theoretical frameworks are applicable to the setting. There are also alternative explanations and approaches to examining sustainable energy policy preferences that are important to keep in

mind alongside the research limitations presented in the empirical chapters. These can include evaluating collective preferences, observing policy choices rather than perceptions, capturing more policy diffusion variables such as related mechanisms, and the actual impact of the policy elite's on policy outcomes. These variables can be assessed in future surveys or compared to in similar studies. At any rate, they should be considered when resubmitting the survey to the same sample population, which I intend to do.

Future Survey Implementation

The survey will be submitted to the same pool of respondents in spring of 2015. This will give me time to further refine the survey and prepare the data analysis approach. This continuous survey approach will broaden the dataset and bring in a useful temporal component to the discussion. I will work with Dr. Geoboo Song to administer the survey and continue to pursue making an impact in the larger public policy context and provide guidance for future research studies in other surrounding states and regions.

The survey questions are designed to be applicable in other locations around the country. Since the intent of the survey was to address the dearth of policy adoption in the southeastern region, the survey is most applicable for states such as Oklahoma, Louisiana, Mississippi Alabama, Florida, Georgia, and Tennessee. These states would offer useful comparisons to the findings in Arkansas and what the possible policy strategy and narratives that could be further developed to support the policy diffusion in the region. Organizations mentioned above, such as the Arkansas Advanced Energy Association, will be valuable partners in disseminating the survey.

Broader Implications

There is a call for more social and behavioral science research in the current climate change and energy policy realms (Shove, 2010; Victor, 2015). The scientist and policy elite boundaries must simultaneously be challenged to make sure policies are informed rather than manipulated or coerced (Keller, 2009). I believe this research study helps inform the policy discussions related to sustainable energy and provides a robust analysis that can be utilized at the state and local levels in Arkansas. The social research approach and the evaluation of knowledge and values of policy elites satisfies both of these calls to action. (Kester et al., 2015).

The geographical policy context presented was Arkansas, which is part of the larger spectrum of democracy in the United States, so there will always need to be a balance of incentive-based and regulatory oriented policies to pursue cost-effectiveness and equitable distribution of benefits (Spence, 2011). The human epoch is upon us, whether it started with agriculture or the industrial revolution (Greenfieldboyce, 2015; Jones, 2011), there is a definitive connection between sustainable energy policy choices and climate impacts. The most difficult job for prominent policy elites is indeed finding a way to balance concerns about both energy security and global warming when considering relevant policy options (Muller, 2012). Thankfully, the two are not mutually exclusive and there are strategies to foster a multi-faceted approach to promoting sustainable energy options.

The overall conclusion from the research story is that it doesn't matter whether the sustainable energy policy deals with renewable energy or energy efficiency, if the policy in incentive-based or regulatory in nature. Whatever the sub-sample, with the exception of the energy efficiency policy focus, there is a positive, modest relationship for egalitarians, and a

negative, modest relationship for individualists. The policy narratives should be informed by these worldviews and the significant policy contextual variables should be considered as the state of Arkansas moves forward and further develops its energy policy into the future.

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Appendix

UNIVERSITY OF ARKANSAS

Office of Research Compliance
Institutional Review Board

February 18, 2014

MEMORANDUM

TO:	Geoboo Song John Kester III Rachael Moyer
FROM:	Ro Windwalker IRB Coordinator
RE:	New Protocol Approval
IRB Protocol #:	14-02-483
Protocol Title:	*2014 Arkansas Public Policy Survey*
Review Type:	☒ EXEMPT ☐ EXPEDITED ☐ FULL IRB
Approved Project Period:	Start Date: 02/18/2014 Expiration Date: 02/17/2015

Your protocol has been approved by the IRB. Protocols are approved for a maximum period of one year. If you wish to continue the project past the approved project period (see above), you must submit a request, using the form *Continuing Review for IRB Approved Projects*, prior to the expiration date. This form is available from the IRB Coordinator or on the Research Compliance website (http://vpred.uark.edu/210.php). As a courtesy, you will be sent a reminder two months in advance of that date. However, failure to receive a reminder does not negate your obligation to make the request in sufficient time for review and approval. Federal regulations prohibit retroactive approval of continuation. Failure to receive approval to continue the project prior to the expiration date will result in Termination of the protocol approval. The IRB Coordinator can give you guidance on submission times.

This protocol has been approved for 800 participants. If you wish to make *any* modifications in the approved protocol, including enrolling more than this number, you must seek approval *prior to* implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 210 Administration Building, 5-2208, or irb@uark.edu

210 Administration Building • 1 University of Arkansas • Fayetteville, AR 72701
Voice (479) 575-2208 • Fax (479) 575-3846 • Email irb@uark.edu

2014 ARKANSAS ENERGY POLICY SURVEY (PHASE I):
Frequency Distributions & Descriptive Statistics

April 30, 2014

Geoboo Song, Ph.D.
Department of Political Science
J. William Fulbright College of Arts and Sciences
University of Arkansas
Old Main 437, Fayetteville, AR 72701

This survey study was conducted by researchers from the Department of Political Science and the Environmental Dynamics Ph.D. program at the University of Arkansas, with the assistance of A. Kate Miller, Hank Jenkins-Smith, and Carol Silva from the University of Oklahoma, Peter Nierengarten from the City of Fayetteville, Spencer Hall and J. Michael Flanigan from the University of Arkansas, Mike Bishop from the Eureka Springs Chamber of Commerce, Perry Webb from the Springdale Chamber of Commerce, and Mike Malone from the Northwest Arkansas Council. This study is not encumbered by any conflicts of interest, as it is conducted independently with no extramural funding.

Cite as: Song, Geoboo, John Kester III, and Rachael Moyer. 2014. *2014 Arkansas Energy Policy Survey (Phase I): Frequency Distributions & Descriptive Statistics*. University of Arkansas, Fayetteville, AR.

2014 Arkansas Energy Policy Survey (Phase I):
Frequency Distributions & Descriptive Statistics

Geoboo Song (University of Arkansas)
John Kester III (University of Arkansas)
Rachael Moyer (University of Arkansas)

A team of faculty and graduate researchers from the Department of Political Science and the Environmental Dynamics Ph.D. program at the University of Arkansas-Fayetteville, are conducting an anonymous Internet survey designed to gauge local policy elites' and business leaders' opinions, attitudes, and preferences toward various important energy policy issues, including energy efficiency, renewable energy, natural resources, and electric power supply infrastructure, in the state of Arkansas. The Institutional Review Board at the University of Arkansas has approved this survey research, and the proper measures are being observed for protecting survey participants' privacy and human rights.

Phase I of this survey, which focused on the opinions of local policy elites mostly in the Northwest Arkansas area, was implemented between March 17th and April 8th in 2014. The University of Arkansas research team distributed an email invitation that briefly describes the general nature and subject matter of this study (with the survey link embedded) to an estimated 1,400 potential survey participants between March 17th and April 1st, using publicly available email addresses acquired from municipal governments' websites and relevant professional organizations in the region.

Among these survey recruits were city council representatives and chamber of commerce members in 15 major cities in Northwest Arkansas, including Rogers, Bentonville, Springdale, Fayetteville, Bella Vista, Lowell, Siloam Springs, Farmington, Johnson, West Fork, Greenland, Tontitown, Elkins, Eureka Springs, and Berryville. The survey invitations were also sent to Arkansas legislators and attendees of the 2014 Arkansas Governor's Conference on Tourism.

Out of 1,400 individuals who received the survey invitations, a total of 235 (or 16.8%) respondents, who are 18 years or older, voluntarily participated in the survey, and 160 (68.2%) of those 235 individuals who started the survey completed it by responding to all the survey questions, while the remaining 75 individuals (31.8%) recorded incomplete responses.

On average, the survey participants of this Phase I survey were 53 years old. Nearly 61 percent were male, 94 percent were non-Hispanic White, 71 percent completed college or a higher

degree, and their median annual household income falls into the range between $70,000 and $80,000.

This report, entitled *2014 Arkansas Energy Policy Survey (Phase I): Frequency Distributions & Descriptive Statistics*, intends to provide detailed information from a survey data analytics perspective, including individual survey question wording, and frequency distributions and descriptive statistics (e.g., the mean and the standard deviation) of corresponding survey responses, when appropriate. In order to enhance readers' understanding of analytic results, bar graphs that visualize the frequency distributions are also provided, when relevant.

1. How old are you?

Statistic	Value
Min Value	21
Max Value	83
Mean	52.96
Variance	136.83
Standard Deviation	11.70
Total Responses	223

2. Are you male or female?

Answer		Response	%
Female		88	39%
Male		137	61%
Total		225	100%

3. This question asks your opinion about some issues facing both citizens and policy elites in the state of Arkansas today. For each of the following issues, please rate your level of concern using

a scale from zero to ten, where zero means you are not at all concerned and ten means you are extremely concerned. How concerned are you about:

Question	Not at all concerned 0	1	2	3	4	5	6	7	8	9	Extremely concerned 10	Total Responses	Mean
Threats to national security, including terrorism	4	7	17	15	10	14	21	41	26	27	30	212	6.42
The delivery and cost of healthcare	2	0	3	2	4	14	16	21	30	49	71	212	8.17
The availability and cost of energy	1	1	5	7	9	21	22	31	36	32	47	212	7.40
The quality and the stability of the environment	0	2	2	3	7	14	16	24	38	30	76	212	8.07
The state of the economy, including jobs and inflation	0	0	0	4	4	11	16	28	44	40	65	212	8.19

Statistic	Threats to national security, including terrorism	The delivery and cost of healthcare	The availability and cost of energy	The quality and the stability of the environment	The state of the economy, including jobs and inflation
Min Value	0	0	0	1	3
Max Value	10	10	10	10	10
Mean	6.42	8.17	7.40	8.07	8.19
Variance	7.64	4.21	5.04	4.28	3.07
Standard Deviation	2.76	2.05	2.24	2.07	1.75
Total Responses	212	212	212	212	212

4. Using a scale from zero to ten, where zero means you are not at all confident and ten means you are completely confident, how confident are you that there will be adequate sources of energy to meet the energy needs of the state of Arkansas during the next 20 years? Please think about Arkansas' energy needs overall, including transportation, heating, electricity, and other energy requirements when considering your answer.

Answer		Response	%
Not at all confident 0		2	1%
1		2	1%
2		7	3%
3		15	7%
4		8	4%
5		25	12%
6		25	12%
7		28	13%
8		34	16%
9		34	16%
Completely confident 10		31	15%
Total		211	100%

Statistic	Value
Min Value	0
Max Value	10
Mean	6.88
Variance	5.85
Standard Deviation	2.42
Total Responses	211

5. As you may know, Arkansas energy policies generally deal with such issues as the sources and adequacy of energy supplies, the costs of various types of energy, and the environmental implications of using energy. Using a scale from zero to ten, where zero means not at all satisfied and ten means completely satisfied, how satisfied are you with current Arkansas energy policies overall?

Answer		Response	%
Not at all satisfied 0		14	7%
1		8	4%
2		15	7%
3		15	7%
4		21	10%
5		44	21%
6		29	14%
7		32	15%
8		21	10%
9		7	3%
Completely satisfied 10		1	0%
Total		207	100%

Statistic	Value
Min Value	0
Max Value	10
Mean	4.96
Variance	5.71
Standard Deviation	2.39
Total Responses	207

6. On a scale from zero to ten, where zero means that nature is robust and not easily damaged and ten means nature is fragile and easily damaged, how do you view nature?

Answer		Response	%
Robust and not easily damaged 0		2	1%
1		0	0%
2		6	3%
3		11	5%
4		10	5%
5		18	9%
6		17	8%
7		25	12%
8		33	16%
9		22	11%
Fragile and easily damaged 10		62	30%
Total		206	100%

Statistic	Value
Min Value	0
Max Value	10
Mean	7.45
Variance	6.05
Standard Deviation	2.46
Total Responses	206

7. On a scale from one to seven, where one means strongly oppose and seven means strongly support, how do you feel about establishing standard-setting goals for renewable energy, as a means of requiring the increased production of energy from renewable energy sources, such as wind, solar, biomass, and geothermal, in your local government and community?

Answer		Response	%
Strongly oppose 1		8	4%
2		8	4%
3		16	8%
Neutral 4		18	9%
5		27	13%
6		29	14%
Strongly support 7		98	48%
Total		204	100%

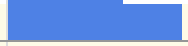
Statistic	Value
Min Value	1
Max Value	7
Mean	5.58
Variance	3.12
Standard Deviation	1.77
Total Responses	204

8. On a scale from one to seven, where one means strongly oppose and seven means strongly support, how do you feel about setting energy savings goals, as a means of requiring reduced energy consumption and increased energy efficiency, in your local government and community?

Answer		Response	%
Strongly oppose 1		7	3%
2		7	3%
3		7	3%
Neutral 4		27	13%
5		33	16%
6		37	18%
Strongly support 7		85	42%
Total		203	100%

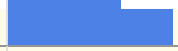
Statistic	Value
Min Value	1
Max Value	7
Mean	5.58
Variance	2.67
Standard Deviation	1.63
Total Responses	203

9. On a scale from one to seven, where one means strongly oppose and seven means strongly support, how do you feel about an adoption of a complete streets policy that requires streets to be planned, designed, operated, and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation, including walking, bikes, and public transportation as well as automobiles in your local government and community?

Answer		Response	%
Strongly oppose 1		5	2%
2		4	2%
3		12	6%
Neutral 4		27	13%
5		31	15%
6		49	24%
Strongly support 7		74	37%
Total		202	100%

Statistic	Value
Min Value	1
Max Value	7
Mean	5.56
Variance	2.35
Standard Deviation	1.53
Total Responses	202

10. On a scale from one to seven, where one means strongly oppose and seven means strongly support, how do you feel about updating the Energy Conservation Codes for the establishment of minimum design and construction requirements for energy efficiency for new residential construction and renovations in your local government and community?

Answer		Response	%
Strongly oppose 1		6	3%
2		9	4%
3		15	7%
Neutral 4		16	8%
5		37	18%
6		48	24%
Strongly support 7		70	35%
Total		201	100%

Statistic	Value
Min Value	1
Max Value	7
Mean	5.45
Variance	2.70
Standard Deviation	1.64
Total Responses	201

11. On a scale from one to seven, where one means strongly oppose and seven means strongly support, how do you feel about an adoption of a tax credit program for renewable energy or energy conservation installations on city, commercial, and residential buildings in your local government and community?

Answer		Response	%
Strongly oppose 1		3	2%
2		5	3%
3		6	3%
Neutral 4		17	9%
5		27	14%
6		46	23%
Strongly support 7		96	48%
Total		200	100%

Statistic	Value
Min Value	1
Max Value	7
Mean	5.91
Variance	2.00
Standard Deviation	1.41
Total Responses	200

12. On a scale from one to seven, where one means strongly oppose and seven means strongly support, how do you feel about setting up a Property Assessed Clean Energy District (a clean energy district financed through property assessment anchored to property deeds, not individuals) as a means of financing energy efficiency upgrades or renewable energy installations for buildings in your local government and community?

Answer		Response	%
Strongly oppose 1		17	9%
2		11	6%
3		17	9%
Neutral 4		53	27%
5		35	18%
6		28	14%
Strongly support 7		39	20%
Total		200	100%

Statistic	Value
Min Value	1
Max Value	7
Mean	4.59
Variance	3.23
Standard Deviation	1.80
Total Responses	200

13. On a scale from one to seven, where one means strongly oppose and seven means strongly support, how do you feel about an adoption of the Home Energy Affordability Loan (or HEAL), a program targeting energy affordability, job creation and greenhouse gas reductions by providing Arkansas businesses with facility audits and zero interest retrofit financing of energy efficiency improvements for their facilities, while providing home audit and retrofit opportunities for up to 100 employees of each participating business, in your local government and community?

Answer		Response	%
Strongly oppose 1		9	5%
2		6	3%
3		9	5%
Neutral 4		22	11%
5		39	20%
6		40	20%
Strongly support 7		74	37%
Total		199	100%

Statistic	Value
Min Value	1
Max Value	7
Mean	5.47
Variance	2.77
Standard Deviation	1.66
Total Responses	199

14. Please respond to each of the following statements using a scale from one to seven, where one means strongly disagree and seven means strongly agree.

Question	Strongly disagree 1	2	3	4	5	6	Strongly agree 7	Total Responses	Mean
The current fiscal status of the local government allows more investments into sustainable energy policies in my community.	21	39	31	39	30	23	5	188	3.57
The current status and future outlook of my local economy are conducive to adopting more sustainable energy policies.	4	20	8	41	46	37	33	189	4.84
There are opportunities to take advantage of cost savings and job creation by implementing sustainable energy policies in my local government and community.	11	15	10	31	47	43	32	189	4.83
There is public support for sustainable energy policies in my local government and community.	2	14	17	32	42	43	39	189	5.03
The community members, not just the local government, should be directly involved in the policy- making process regarding energy efficiency and renewable energy programs.	2	4	4	24	27	56	72	189	5.78
The general public does not know enough about the benefits and costs associated with the sustainable energy policies to play a crucial role in the policy-making process.	18	17	19	14	34	39	48	189	4.79

The technology for sustainable energy policies is readily accessible, feasible to implement, and cost effective.	14	18	23	38	34	38	24	189	4.43
A number of improvements to technology remain before sustainable energy policies should be implemented.	25	29	31	35	33	22	13	188	3.74
The local government is capable of administering and implementing energy efficiency and renewable energy programs in my community.	23	29	26	30	33	33	14	188	3.94
Sustainable energy policies will improve the utility of land being used for commercial, industrial, and residential buildings in the city.	4	11	9	27	36	45	57	189	5.34

Statistic	The current fiscal status of the local government allows more investments into sustainable energy policies in my community.	The current status and future outlook of my local economy are conducive to adopting more sustainable energy policies.	There are opportunities to take advantage of cost savings and job creation by implementing sustainable energy policies in my local government and community.	There is public support for sustainable energy policies in my local government and community.	The community members, not just the local government, should be directly involved in the policy-making process regarding energy efficiency and renewable energy programs.	The general public does not know enough about the benefits and costs associated with the sustainable energy policies to play a crucial role in the policy-making process.	The technology for sustainable energy policies is readily accessible, feasible to implement, and cost effective.	A number of improvements to technology remain before sustainable energy policies should be implemented.	The local government is capable of administering and implementing energy efficiency and renewable energy programs in my community.	Sustainable energy policies will improve the utility of land being used for commercial, industrial, and residential buildings in the city.
Min Value	1	1	1	1	1	1	1	1	1	1
Max Value	7	7	7	7	7	7	7	7	7	7

Mean	3.57	4.84	4.83	5.03	5.78	4.79	4.43	3.74	3.94	5.34
Variance	2.72	2.56	2.91	2.43	1.79	4.01	3.13	3.20	3.42	2.54
Standard Deviation	1.65	1.60	1.71	1.56	1.34	2.00	1.77	1.79	1.85	1.59
Total Responses	188	189	189	189	189	189	189	188	188	189

15. On a scale from one to seven, where one means extremely negative and seven means extremely positive, please indicate how you generally feel about the installation of high voltage power lines.

Answer		Response	%
Extremely negative 1		78	41%
2		26	14%
3		17	9%
Neutral 4		25	13%
5		14	7%
6		17	9%
Extremely positive 7		11	6%
Total		188	100%

Statistic	Value
Min Value	1
Max Value	7
Mean	2.82
Variance	3.97
Standard Deviation	1.99
Total Responses	188

16. With the following list of feelings using a scale from zero to ten, where zero means not at all and ten means extremely, please indicate how you feel as you think about high voltage power lines being installed in your area:

Question	Not at all 0	1	2	3	4	5	6	7	8	9	Extremely 10	Total Responses	Mean
Pleased	106	16	11	9	6	17	4	7	3	2	5	186	1.82
Happy	103	19	11	8	4	19	5	10	0	1	6	186	1.85
Excited	108	17	14	9	1	20	2	5	3	1	5	185	1.65
Irritated	31	15	7	3	3	18	8	13	16	10	62	186	6.01
Fearful	37	17	11	11	6	16	8	14	11	12	43	186	5.10
Calm	62	16	15	11	5	35	6	9	7	9	11	186	3.33
Apathetic	91	18	21	5	4	21	7	5	3	3	8	186	2.17
Angry	41	11	9	7	5	19	14	8	8	10	54	186	5.37
Content	94	15	8	8	5	31	6	5	5	3	6	186	2.30
Disgusted	39	11	8	6	5	20	4	12	10	9	62	186	5.67
Uncertain	58	17	8	7	9	24	8	6	11	9	29	186	4.08

Statistic	Pleased	Happy	Excited	Irritated	Fearful	Calm	Apathetic	Angry	Content	Disgusted	Uncertain
Min Value	0	0	0	0	0	0	0	0	0	0	0
Max Value	10	10	10	10	10	10	10	10	10	10	10
Mean	1.82	1.85	1.65	6.01	5.10	3.33	2.17	5.37	2.30	5.67	4.08
Variance	7.49	7.49	6.81	15.24	15.00	10.80	8.60	15.77	8.72	16.25	14.45
Standard Deviation	2.74	2.74	2.61	3.90	3.87	3.29	2.93	3.97	2.95	4.03	3.80
Total Responses	186	186	185	186	186	186	186	186	186	186	186

17. On a scale from zero to ten, where zero means not at all beneficial and ten means extremely beneficial, how much benefit do you think the installation of high voltage power lines in Northwest Arkansas and South Missouri would bring to your local government and community in the following categories?

Question	Not at all beneficial 0	1	2	3	4	5	6	7	8	9	Extremely beneficial 10	Total Responses	Mean
Energy supply stability and reliability	50	15	11	9	3	21	10	11	11	17	23	181	4.36
Efficient energy transmission	55	14	11	4	9	23	13	9	19	10	13	180	3.96
New economic opportunities and job creation	62	19	8	10	5	19	15	8	10	11	14	181	3.56
Provision of structure for renewable energy sources	69	15	14	5	4	26	12	10	10	6	9	180	3.17
Efficient land use	82	12	10	7	10	22	6	8	7	7	9	180	2.80
Necessary services maintained during post-disaster or high energy demand periods	52	14	7	8	6	20	14	15	10	17	17	180	4.27

Statistic	Energy supply stability and reliability	Efficient energy transmission	New economic opportunities and job creation	Provision of structure for renewable energy sources	Efficient land use	Necessary services maintained during post-disaster or high energy demand periods
Min Value	0	0	0	0	0	0
Max Value	10	10	10	10	10	10
Mean	4.36	3.96	3.56	3.17	2.80	4.27
Variance	14.19	12.47	12.56	11.02	10.82	13.35
Standard Deviation	3.77	3.53	3.54	3.32	3.29	3.65
Total Responses	181	180	181	180	180	180

18. On a scale from zero to ten, where zero means no risk and ten means extreme risk, how much risk do you think the installation of high voltage power lines in Northwest Arkansas and South Missouri would pose to your local government and community in the following categories?

Question	No risk 0	1	2	3	4	5	6	7	8	9	Extreme risk 10	Total Responses	Mean
Environmental degradation from clear-cutting trees for power line installation	10	9	11	4	5	8	13	18	7	20	73	178	7.15
Pesticide/herbicide use for securing power lines	7	15	12	2	5	15	8	19	11	12	72	178	6.95
Decreasing property values in affected areas	8	9	7	9	2	8	11	18	11	16	79	178	7.37
Threats to tourism (and/or other related industries)	16	10	10	8	4	8	7	15	14	17	69	178	6.81
Negative health impacts due to electromagnetic field emission	25	9	10	9	6	16	12	18	12	15	45	177	5.87

Statistic	Environmental degradation from clear-cutting trees for power line installation	Pesticide/herbicide use for securing power lines	Decreasing property values in affected areas	Threats to tourism (and/or other related industries)	Negative health impacts due to electromagnetic field emission
Min Value	0	0	0	0	0
Max Value	10	10	10	10	10
Mean	7.15	6.95	7.37	6.81	5.87
Variance	11.20	11.49	10.49	12.96	13.20
Standard Deviation	3.35	3.39	3.24	3.60	3.63
Total Responses	178	178	178	178	177

19. Using a scale from one to seven, where one means the risks of installation of high voltage power lines far outweigh its benefits, four means the risks and benefits are equally balanced, and seven means the benefits of the installation of high voltage power lines far outweigh its risks, how do you rate the overall balance of the risks and benefits associated with such a power line installation in your local government and community? Remember, you can choose any number from one to seven.

Answer		Response	%
Risk far outweigh benefits 1		64	37%
2		23	13%
3		21	12%
Risks and benefits are equally balanced 4		17	10%
5		15	9%
6		22	13%
Benefits far outweigh risks 7		13	7%
Total		175	100%

Statistic	Value
Min Value	1
Max Value	7
Mean	3.08
Variance	4.37
Standard Deviation	2.09
Total Responses	175

20. Please respond to each of the following statements using a scale from one to seven, where one means strongly disagree and seven means strongly agree.

Question	Strongly disagree 1	2	3	4	5	6	Strongly agree 7	Total Responses	Mean
Society is in trouble because people do not obey those in authority.	51	35	24	29	20	5	8	172	2.88
The best way to get ahead in life is to do what you are told to do to the best of your abilities.	53	37	24	24	12	12	9	171	2.87
For the most part, succeeding in life is a matter of chance.	63	55	23	11	14	4	1	171	2.26
Society works best if power is shared equally.	14	11	23	30	27	33	32	170	4.60
We are all better off when we compete as individuals.	25	22	18	27	27	30	22	171	4.09
Even the disadvantaged should have to make their own way in the world.	17	37	28	41	29	10	8	170	3.53
It is our responsibility to reduce differences in income between the rich and the poor.	48	22	17	24	15	19	26	171	3.57
No matter how hard we try, the course of our lives is largely determined by forces beyond our control.	47	45	25	30	9	12	3	171	2.75
Even if some people are at a disadvantage, it is best for society to let people succeed or fail on their own.	19	21	40	31	16	30	14	171	3.88
Most of the important things that take place in life happen by random chance.	62	46	27	21	12	2	1	171	2.33
What society needs is a fairness revolution to make the distribution of goods more equal.	68	20	15	29	14	9	16	171	2.95

Society would be much better off if we imposed strict and swift punishment on those who break the rules.	26	18	23	29	39	20	16	171	3.94

Statistic	Society is in trouble because people do not obey those in authority.	The best way to get ahead in life is to do what you are told to do to the best of your abilities.	For the most part, succeeding in life is a matter of chance.	Society works best if power is shared equally.	We are all better off when we compete as individuals.	Even the disadvantaged should have to make their own way in the world.	It is our responsibility to reduce differences in income between the rich and the poor.	No matter how hard we try, the course of our lives is largely determined by forces beyond our control.	Even if some people are at a disadvantage, it is best for society to let people succeed or fail on their own.	Most of the important things that take place in life happen by random chance.	What society needs is a fairness revolution to make the distribution of goods more equal.	Society would be much better off if we imposed strict and swift punishment on those who break the rules.
Min Value	1	1	1	1	1	1	1	1	1	1	1	1
Max Value	7	7	7	7	7	7	7	7	7	7	7	7
Mean	2.88	2.87	2.26	4.60	4.09	3.53	3.57	2.75	3.88	2.33	2.95	3.94
Variance	3.03	3.35	1.96	3.42	3.97	2.56	4.88	2.61	3.26	1.88	4.20	3.48
Standard Deviation	1.74	1.83	1.40	1.85	1.99	1.60	2.21	1.62	1.81	1.37	2.05	1.87

Total Responses	172	171	171	170	171	170	171	171	171	171	171	171

21. Which of the following statements best describes your outlook on life?

Answer		Response	%
I am more comfortable when I know who is, and who is not, a part of my group, and loyalty to the group is important to me. I prefer to know who is in charge and to have clear rules and procedures; those who are in charge should punish those who break the rules. I like to have my responsibilities clearly defined, and I believe people should be rewarded based on the position they hold and their competence. Most of the time, I trust those with authority and expertise to do what is right for society.		42	25%
Groups are not all that important to me. I prefer to make my own way in life without having to follow other peoples' rules. Rewards in life should be based on initiative, skill, and hard work, even if that results in inequality. I respect people based on what they do, not the positions or titles they hold. I like relationships that are based on negotiated "give and take," rather than on status. Everyone benefits when individuals are allowed to compete.		91	54%
Society today is unfair and corrupt, and my most important contributions are made as a member of a group that promotes justice and equality. Within my group, everyone should play an equal role without differences in rank or authority. It is easy to lose track of what is important, so I have to keep a close eye on the actions of my group. It is not enough to provide equal opportunities; we also have to try to make outcomes more equal.		27	16%
Life is unpredictable and I have little control. I have to live by lots of rules, but I don't get to make them. My fate in life is determined mostly by chance. I can't become a member of the groups that make most of the important decisions affecting me. Getting along in life is largely a matter of doing the best I can with what comes my way, so I focus on taking care of myself and the people closest to me.		7	4%
Total		167	100%

22. Please respond to each of the following statements using a scale from one to seven, where one means strongly disagree and seven means strongly agree.

Question	Strongly disagree 1	2	3	4	5	6	Strongly agree 7	Total Responses	Mean
Technically trained experts, not the public, should make decisions about the application of advanced technologies within society, such as new mandatory vaccines, use of genetically engineered foods, or reliance on nuclear energy.	43	22	34	21	29	10	7	166	3.17
Advanced technologies can solve almost all of society's problems.	35	38	27	33	20	9	4	166	3.05
The results of scientific research are always significantly affected by the values held by the researcher.	11	21	22	38	32	26	16	166	4.21
Researchers can manipulate their analysis to advocate their own beliefs and policy positions.	2	6	6	24	37	40	52	167	5.49
The evidence-based scientific process is the only valid and reliable way to understand nature and society.	15	16	25	33	34	18	24	165	4.24
Most members of the general public are not capable of understanding the policy implications of modern science and technology.	30	22	23	21	38	25	8	167	3.73

When researchers and scientists become advisers to policy makers, they have to sacrifice some of their independent objectivity to advocate the predetermined policy positions of their "clients".	30	15	17	28	28	26	21	165	4.04
Those who are better informed and knowledgeable should have more influence in policy making.	7	8	12	21	57	43	18	166	4.89
Technical issues are so complex that most people cannot contribute to reasonable policy choices.	30	25	26	35	35	13	3	167	3.43
Even if the public is not well-informed about an issue, policy makers should rely on mass opinion in making important policy decisions about that issue.	20	25	30	50	13	20	8	166	3.62
When taken as a whole, public opinion usually provides reasonable direction for public policy.	2	15	27	34	46	30	13	167	4.49

Statistic	Technically trained experts, not the public, should make decisions about the application of advanced technologies within society, such as new mandatory vaccines, use of genetically engineered foods, or	Advanced technologies can solve almost all of society's problems.	The results of scientific research are always significantly affected by the values held by the researcher.	Researchers can manipulate their analysis to advocate their own beliefs and policy positions.	The evidence-based scientific process is the only valid and reliable way to understand nature and society.	Most members of the general public are not capable of understanding the policy implications of modern science and technology.	When researchers and scientists become advisers to policy makers, they have to sacrifice some of their independent objectivity to advocate the predetermined policy positions of their "clients".	Those who are better informed and knowledgeable should have more influence in policy making.	Technical issues are so complex that most people cannot contribute to reasonable policy choices.	Even if the public is not well-informed about an issue, policy makers should rely on mass opinion in making important policy decisions about that issue.	When taken as a whole, public opinion usually provides reasonable direction for public policy.

	reliance on nuclear energy.										
Min Value	1	1	1	1	1	1	1	1	1	1	1
Max Value	7	7	7	7	7	7	7	7	7	7	7
Mean	3.17	3.05	4.21	5.49	4.24	3.73	4.04	4.89	3.43	3.62	4.49
Variance	3.20	2.64	2.89	2.06	3.27	3.49	4.07	2.22	2.74	2.73	2.09
Standard Deviation	1.79	1.62	1.70	1.43	1.81	1.87	2.02	1.49	1.66	1.65	1.45
Total Responses	166	166	166	167	165	167	165	166	167	166	167

23. With which of the following major religions do you most identify?

Answer		Response	%
Buddhism		6	4%
Catholicism		16	10%
Protestantism		70	42%
Hinduism		0	0%
Islam		0	0%
Judaism		4	2%
Something else (specify)		25	15%
No religion		46	28%
Total		167	100%

24. Now, using a scale from zero to ten, where zero means not at all important and ten means extremely important, how important is religious faith in your life?

Answer		Response	%
Not at all important 0		33	20%
1		12	7%
2		6	4%
3		10	6%
4		8	5%
5		8	5%
6		7	4%
7		13	8%
8		17	10%
9		12	7%
Extremely important 10		42	25%
Total		168	100%

Statistic	Value
Min Value	0
Max Value	10
Mean	5.49
Variance	15.16
Standard Deviation	3.89
Total Responses	168

25. Do you have an account on a web-based social networking site, such as Facebook, Twitter, or Linkedin?

Answer		Response	%
No		23	14%
Yes		144	86%
Total		167	100%

26. How often do you update or access your social networking account?

Answer		Response	%
Never		3	2%
Less than once a month		17	12%
Several times a month		14	10%
About once a week		16	11%
Several times a week		30	21%
Once or twice most days		36	25%
Several times almost every day		28	19%
Total		144	100%

Statistic	Value
Min Value	1
Max Value	7
Mean	4.90
Variance	2.93
Standard Deviation	1.71
Total Responses	144

27. Are you now, or have you in the past, affiliated with any of the following organizational/professional categories? (Check all that apply)

Answer		Response	%
Governmental sector involved with environmental conservation and sustainability issues (e.g., U.S. Environmental Protection Agency, Arkansas Department of Environmental Quality, Fayetteville Department of Sustainability and Resilience, etc.)		32	24%
Governmental sector involved with park and recreation issues (e.g., U.S. National Park Service, Arkansas Department of Parks and Tourism, Fayetteville Department of Parks and Recreation, etc.)		48	36%
Governmental sector involved with economic/regional development (e.g., U.S. Department of Commerce, Arkansas Economic Development Commission, Fayetteville Economic Development, etc.)		27	20%
Governmental sector involved with energy issues (e.g., U.S. Department of Energy, Arkansas State Energy Office, etc.)		15	11%
Non-profit sector involved with environmental conservation and sustainability issues (e.g., Sierra Club, Nature Conservancy, etc.)		48	36%
Non-profit sector involved with economic/regional development issues (e.g., Northwest Arkansas Council, City Chambers of Commerce, etc.)		74	55%
Energy business sector (e.g., Electric Cooperatives of Arkansas, Southwestern Electric Power Company, etc.)		19	14%
Tourism/leisure/hospitality business sector		86	64%

28. On a scale from zero to ten where zero means not at all informed and ten means completely informed, how well informed do you consider yourself to be about the issues regarding energy policy in general, and particularly, high voltage power line installation?

Answer		Response	%
Not at all informed 0		2	1%
1		2	1%
2		4	2%
3		8	5%
4		8	5%
5		18	11%
6		18	11%
7		27	16%
8		37	22%
9		24	14%
Completely informed 10		19	11%
Total		167	100%

Statistic	Value
Min Value	0
Max Value	10
Mean	6.92
Variance	5.20
Standard Deviation	2.28
Total Responses	167

29. To the best of your knowledge, are the following statements true or false?

Question	False	True	Total Responses
Most scientists and energy experts agree that the estimates for natural gas reserves in the U.S. have increased since 2001.	17	136*	153
Coal-fired electric power plants in Arkansas supply almost three quarters of the state's electricity.	59*	96	155
There has been a state decision on the prospective placement of high voltage power lines in Northwest Arkansas.	83	74*	157
A state legislation has been proposed to prevent the prospective installation of high voltage power lines in either Arkansas or Missouri.	55	101*	156
Independent power producers provide about a quarter of net electricity generation in Arkansas.	64	87*	151
Arkansas recently ranked 17th in the nation in terms of total energy consumed per capita.	79	70*	149
Biomass supplied all of Arkansas' non-hydroelectric renewable energy resources for electricity generation in 2010.	118	35*	153
Most scientists agree that electromagnetic fields from high voltage power lines can increase the risk of leukemia among those living in their proximity.	86*	66	152

* Correct answer

30. Using a scale where zero means not at all trustworthy, and ten means completely trustworthy, how trustworthy is information about policy issues, such as sustainable energy and high voltage power lines, from each of the following sources?

Question	Not at all trustworthy 0	1	2	3	4	5	6	7	8	9	Completely trustworthy 10	Total Responses	Mean
The Internet, including independent news sources, blogs, and discussion groups	11	8	20	15	16	39	19	10	13	5	3	159	4.50
Friends and family	6	9	15	17	14	43	13	8	17	12	5	159	4.96
Government agencies	15	16	17	15	13	25	15	30	9	3	2	160	4.32
Environmental conservation groups	7	11	7	11	12	18	24	25	23	10	12	160	5.68
Economic/regional development groups	7	8	7	18	14	40	20	13	22	9	0	158	5.06
Scientists and academics	1	1	3	2	7	17	19	33	44	26	7	160	7.04
Mainstream news media	28	17	15	18	15	29	14	9	10	4	1	160	3.62
Religious leaders	41	22	17	11	13	27	8	4	10	4	2	159	3.07
Energy industry	35	16	18	17	9	21	7	18	11	6	2	160	3.59
Tourism industry	2	9	8	15	13	35	24	20	22	9	3	160	5.43

Statistic	The Internet, including independent news sources, blogs, and discussion groups	Friends and family	Government agencies	Environmental conservation groups	Economic/regional development groups	Scientists and academics	Mainstream news media	Religious leaders	Energy industry	Tourism industry
Min Value	0	0	0	0	0	0	0	0	0	0
Max Value	10	10	10	10	9	10	10	10	10	10
Mean	4.50	4.96	4.32	5.68	5.06	7.04	3.62	3.07	3.59	5.43
Variance	6.01	6.49	6.90	7.46	5.51	3.48	7.03	7.74	8.65	5.23
Standard Deviation	2.45	2.55	2.63	2.73	2.35	1.86	2.65	2.78	2.94	2.29
Total Responses	159	159	160	160	158	160	160	159	160	160

31. Which of the following best describes your race or ethnic background?

Answer		Response	%
American Indian		2	1%
Asian		0	0%
Black or African American		1	1%
Hispanic		0	0%
White non-Hispanic		154	94%
Something else (specify)		7	4%
Total		164	100%

Something else (specify)
american
Human
Lebanese American
slavic
White
white & hispanic
human

32. What is the highest level of education you have completed?

Answer		Response	%
Elementary or some high school		0	0%
High school graduate/GED		5	3%
Some college/vocational school		43	26%
College graduate		47	29%
Some graduate work		15	9%
Master's degree		36	22%
Doctorate (of any type)		16	10%
Other degree (specify)		1	1%
Total		163	100%

Other degree (specify)
Specialist--30 hrs beyond Master's

33. What is the five digit zip code at your residence? (This information will only be used to compare grouped regional differences, not to identify you.)

Statistic	Value
Total Responses	161

34. Which of the following income categories approximates the total estimated annual income from your household for the previous year?

Answer		Response	%
Less than $50,000		32	20%
At least $50,000 but less than $100,000		72	44%
At least $100,000 but less than $150,000		34	21%
$150,000 or more		24	15%
Total		162	100%

35. Was the estimated annual income for your household last year:

Answer		Response	%
Less than $10,000		0	0%
$10,000 to less than $20,000		7	22%
$20,000 to less than $30,000		8	25%
$30,000 to less than $40,000		12	38%
$40,000 to less than $50,000		5	16%
Total		32	100%

36. Was the estimated annual income for your household last year:

Answer		Response	%
$50,000 to less than $60,000		17	24%
$60,000 to less than $70,000		20	29%
$70,000 to less than $80,000		13	19%
$80,000 to less than $90,000		9	13%
$90,000 to less than $100,000		11	16%
Total		70	100%

37. Was the estimated annual income for your household last year:

Answer		Response	%
$100,000 to less than $110,000		6	18%
$110,000 to less than $120,000		7	21%
$120,000 to less than $130,000		5	15%
$130,000 to less than $140,000		8	24%
$140,000 to less than $150,000		7	21%
Total		33	100%

38. Was the estimated annual income for your household last year:

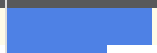
Answer		Response	%
$150,000 to less than $160,000		8	33%
$160,000 to less than $170,000		3	13%
$170,000 to less than $180,000		1	4%
$180,000 to less than $190,000		1	4%
$190,000 to less than $200,00		3	13%
$200,000 or more		8	33%
Total		24	100%

39. On a scale of political ideology, individuals can be arranged from strongly liberal to strongly conservative. Which of the following best describes your views?

Answer		Response	%
Strongly liberal 1		20	13%
Liberal 2		26	16%
Slightly liberal 3		23	14%
Middle of the road 4		33	21%
Slightly conservative 5		15	9%
Conservative 6		33	21%
Strongly conservative 7		9	6%
Total		159	100%

Statistic	Value
Min Value	1
Max Value	7
Mean	3.83
Variance	3.36
Standard Deviation	1.83
Total Responses	159

40. With which political party do you most identify?

Answer		Response	%
Democratic		48	31%
Republican		33	21%
Independent		58	37%
Other party (specify)		18	11%
Total		157	100%

2014 ARKANSAS ENERGY POLICY SURVEY (PHASE II)

Frequency Distributions and Descriptive Statistics

September 30, 2014

Geoboo Song, Ph.D.
Department of Political Science
J. William Fulbright College of Arts and Sciences
University of Arkansas
Old Main 437, Fayetteville, AR 72701

This survey study was conducted by researchers from the Department of Political Science and the Environmental Dynamics Ph.D. program at the University of Arkansas, with the assistance of A. Kate Miller, Hank Jenkins-Smith, and Carol Silva from the University of Oklahoma, Peter Nierengarten from the City of Fayetteville, J. Michael Flanigan, C. Creed Tumlison, Liz Petray, and Spencer Hall from the University of Arkansas, and Mike Malone from the Northwest Arkansas Council. This study is not encumbered by any conflicts of interest, as it is conducted independently with no extramural funding.

Cite as: Kester III, John, Rachael Moyer, and Geoboo Song. 2014. *2014 Arkansas Energy Policy Survey (Phase II): Frequency Distributions and Descriptive Statistics*. University of Arkansas, Fayetteville, AR.

2014 Arkansas Energy Policy Survey (Phase II):
Frequency Distributions and Descriptive Statistics

John Kester III (University of Arkansas)
Rachael Moyer (University of Arkansas)
Geoboo Song (University of Arkansas)

A team of faculty and graduate researchers from the Department of Political Science and the Environmental Dynamics Ph.D. program at the University of Arkansas-Fayetteville conducted an anonymous Internet survey designed to gauge local policy elites' and business leaders' opinions, attitudes, and preferences toward various important energy policy issues, including energy efficiency, renewable energy, natural resources, and electric power supply infrastructure, in the state of Arkansas. The Institutional Review Board at the University of Arkansas approved this survey research, and the proper measures were observed for protecting survey participants' privacy and human rights.

Phase I of this survey, which focused on the opinions of local policy elites mostly in the Northwest Arkansas area, was implemented between March 17th and April 8th in 2014. Phase II, which is the primary concern of this report, shifted the scope of the survey research to the rest of Arkansas. The University of Arkansas research team distributed an email invitation briefly describing the general nature and subject matter of this study (with the survey link embedded) to an estimated 1,774 potential survey participants between July 22nd and August 27th using publicly available email addresses acquired from municipal governments' websites and relevant professional organizations in the region. Among these survey recruits were city council representatives and chamber of commerce members in Arkansas.

Out of 1,774 individuals who received the survey invitations, a total of 177 (10.0%) respondents, who are 18 years or older, voluntarily participated in the survey, and 156 (88.1%) of those 177 individuals who started the survey completed it by responding to all the survey questions, while the remaining 21 individuals (11.9%) recorded incomplete responses.

On average, the survey participants of this Phase II survey were 54.6 years old. 72 percent were male, 88 percent were non-Hispanic White, 76 percent completed college or a higher degree, and their median annual household income falls into a range between $70,000 *and* $80,000.

This report, entitled *2014 Arkansas Energy Policy Survey (Phase II): Frequency Distributions and Descriptive Statistics*, intends to provide detailed information from a survey data analytics

perspective, including individual survey question wording and frequency distributions and descriptive statistics (e.g., the mean and the standard deviation) of corresponding survey responses, when appropriate. In order to enhance readers' understanding of analytic results, bar graphs that visualize the frequency distributions are also provided, when relevant.

1. How old are you?

Statistic	Value
Min Value	26
Max Value	87
Mean	54.59
Variance	153.76
Standard Deviation	12.40
Total Responses	162

2. This question asks your opinion about some issues facing both citizens and policy elites in the state of Arkansas today. For each of the following issues, please rate your level of concern using a scale from zero to ten, where zero means you are not at all concerned and ten means you are extremely concerned. How concerned are you about:

Question	Not at all concerned 0	1	2	3	4	5	6	7	8	9	Extremely concerned 10	Total Responses	Mean
Threats to national security, including terrorism	0	1	7	8	4	13	17	20	31	20	35	156	8.31
The delivery and cost of healthcare	0	0	0	2	3	6	4	20	31	34	56	156	9.50
The availability and cost of energy	0	0	3	3	7	8	17	20	34	28	36	156	8.75
The quality and the stability of the environment	0	1	2	2	4	25	13	24	32	25	28	156	8.43
The state of the economy, including jobs and inflation	0	1	0	0	2	5	9	26	26	38	49	156	9.40

Statistic	Threats to national security, including terrorism	The delivery and cost of healthcare	The availability and cost of energy	The quality and the stability of the environment	The state of the economy, including jobs and inflation
Min Value	2	4	3	2	2
Max Value	11	11	11	11	11
Mean	8.31	9.50	8.75	8.43	9.40
Variance	5.52	2.63	3.98	4.01	2.56
Standard Deviation	2.35	1.62	2.00	2.00	1.60
Total Responses	156	156	156	156	156

3. The next several questions ask about your views on energy and environmental issues. These questions concern your perceptions and beliefs, so don't worry about being right or wrong when you provide your answers. Using a scale from zero to ten, where zero means you are not at all confident and ten means you are completely confident, how confident are you that there will be adequate sources of energy to meet the energy needs of the state of Arkansas during the next 20 years? Please think about Arkansas' energy needs overall, including transportation, heating, electricity, and other energy requirements when considering your answer.

Answer		Response	%
Not at all confident 0		1	1%
1		0	0%
2		5	3%
3		10	6%
4		7	4%
5		12	8%
6		25	16%
7		24	15%
8		32	21%
9		20	13%
Completely confident 10		20	13%
Total		156	100%

Statistic	Value
Min Value	1
Max Value	11
Mean	7.94
Variance	4.91
Standard Deviation	2.22
Total Responses	156

4. As you may know, Arkansas energy policies generally deal with such issues as the sources and adequacy of energy supplies, the costs of various types of energy, and the environmental implications of using energy. Using a scale from zero to ten, where zero means not at all satisfied and ten means completely satisfied, how satisfied are you with current Arkansas energy policies overall?

Answer		Response	%
Not at all satisfied 0		2	1%
1		2	1%
2		6	4%
3		10	6%
4		13	8%
5		29	19%
6		26	17%
7		26	17%
8		29	19%
9		7	5%
Completely satisfied 10		4	3%
Total		154	100%

Statistic	Value
Min Value	1
Max Value	11
Mean	6.94
Variance	4.30
Standard Deviation	2.07
Total Responses	154

5. On a scale from zero to ten, where zero means that nature is robust and not easily damaged and ten means nature is fragile and easily damaged, how do you view nature?

Answer		Response	%
Robust and not easily damaged 0		4	3%
1		1	1%
2		4	3%
3		9	6%
4		8	5%
5		20	13%
6		25	16%
7		25	16%
8		35	23%
9		11	7%
Fragile and easily damaged 10		13	8%
Total		155	100%

Statistic	Value
Min Value	1
Max Value	11
Mean	7.46
Variance	5.22
Standard Deviation	2.29
Total Responses	155

6. The next several questions ask about your views on sustainable energy policies and practices in your local government and community. These questions concern your experiences, perceptions, and opinions, so don't worry about being right or wrong when you provide your answers. On a scale from one to seven, where one means strongly oppose and seven means strongly support, how do you feel about establishing standard-setting goals for renewable energy, as a means of requiring the increased production of energy from renewable energy sources, such as wind, solar, biomass, and geothermal, in your local government and community?

Answer		Response	%
Strongly oppose 1		9	6%
2		7	5%
3		12	8%
Neutral 4		22	14%
5		26	17%
6		37	24%
Strongly support 7		41	27%
Total		154	100%

Statistic	Value
Min Value	1
Max Value	7
Mean	5.10
Variance	3.11
Standard Deviation	1.76
Total Responses	154

7. On a scale from one to seven, where one means strongly oppose and seven means strongly support, how do you feel about setting energy savings goals, as a means of requiring reduced energy consumption and increased energy efficiency, in your local government and community?

Answer		Response	%
Strongly oppose 1		9	6%
2		9	6%
3		11	7%
Neutral 4		16	10%
5		34	22%
6		39	25%
Strongly support 7		35	23%
Total		153	100%

Statistic	Value
Min Value	1
Max Value	7
Mean	5.05
Variance	3.05
Standard Deviation	1.75
Total Responses	153

8. On a scale from one to seven, where one means strongly oppose and seven means strongly support, how do you feel about an adoption of a complete streets policy that requires streets to be planned, designed, operated, and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation, including walking, bikes, and public transportation as well as automobiles in your local government and community?

Answer		Response	%
Strongly oppose 1		6	4%
2		5	3%
3		8	5%
Neutral 4		15	10%
5		31	20%
6		34	22%
Strongly support 7		54	35%
Total		153	100%

Statistic	Value
Min Value	1
Max Value	7
Mean	5.47
Variance	2.66
Standard Deviation	1.63
Total Responses	153

9. On a scale from one to seven, where one means strongly oppose and seven means strongly support, how do you feel about updating the Energy Conservation Codes for the establishment of minimum design and construction requirements for energy efficiency for new residential construction and renovations in your local government and community?

Answer		Response	%
Strongly oppose 1		5	3%
2		6	4%
3		8	5%
Neutral 4		20	13%
5		32	21%
6		40	26%
Strongly support 7		41	27%
Total		152	100%

Statistic	Value
Min Value	1
Max Value	7
Mean	5.32
Variance	2.48
Standard Deviation	1.58
Total Responses	152

10. On a scale from one to seven, where one means strongly oppose and seven means strongly support, how do you feel about an adoption of a tax credit program for renewable energy or energy conservation installations on city, commercial, and residential buildings in your local government and community?

Answer		Response	%
Strongly oppose 1		5	3%
2		1	1%
3		4	3%
Neutral 4		18	12%
5		24	16%
6		50	33%
Strongly support 7		50	33%
Total		152	100%

Statistic	Value
Min Value	1
Max Value	7
Mean	5.66
Variance	2.03
Standard Deviation	1.42
Total Responses	152

11. On a scale from one to seven, where one means strongly oppose and seven means strongly support, how do you feel about setting up a Property Assessed Clean Energy District (a clean energy district financed through property assessment anchored to property deeds, not individuals) as a means of financing energy efficiency upgrades or renewable energy installations for buildings in your local government and community?

Answer		Response	%
Strongly oppose 1		12	8%
2		13	9%
3		17	11%
Neutral 4		46	30%
5		28	19%
6		18	12%
Strongly support 7		17	11%
Total		151	100%

Statistic	Value
Min Value	1
Max Value	7
Mean	4.24
Variance	2.81
Standard Deviation	1.68
Total Responses	151

12. On a scale from one to seven, where one means strongly oppose and seven means strongly support, how do you feel about an adoption of the Home Energy Affordability Loan (or HEAL), a program targeting energy affordability, job creation and greenhouse gas reductions by providing Arkansas businesses with facility audits and zero interest retrofit financing of energy efficiency improvements for their facilities, while providing home audit and retrofit opportunities for up to 100 employees of each participating business, in your local government and community?

Answer		Response	%
Strongly oppose 1		3	2%
2		6	4%
3		9	6%
Neutral 4		24	16%
5		39	26%
6		34	23%
Strongly support 7		34	23%
Total		149	100%

Statistic	Value
Min Value	1
Max Value	7
Mean	5.20
Variance	2.20
Standard Deviation	1.48
Total Responses	149

13. Please respond to each of the following statements using a scale from one to seven, where one means strongly disagree and seven means strongly agree.

Question	Strongly disagree 1	2	3	4	5	6	Strongly agree 7	Total Responses	Mean
The current fiscal status of the local government allows more investments into sustainable energy policies in my community.	23	36	36	17	17	7	6	142	3.10
The current status and future outlook of my local economy are conducive to adopting more sustainable energy policies.	10	21	21	35	36	13	6	142	3.91
There are opportunities to take advantage of cost savings and job creation by implementing sustainable energy policies in my local government and community.	10	8	20	35	24	36	9	142	4.40
There is public support for sustainable energy policies in my local government and community.	6	26	32	33	26	15	5	143	3.78
The community members, not just the local government, should be directly involved in the policy- making process regarding energy efficiency and renewable energy programs.	4	3	6	13	34	36	47	143	5.56
The general public does not know enough about the benefits and costs associated with the sustainable energy policies to play a crucial role in the policy-making process.	10	9	17	13	18	36	40	143	5.01
The technology for sustainable energy policies is readily accessible, feasible to implement, and cost effective.	12	21	33	30	21	19	6	142	3.76

A number of improvements to technology remain before sustainable energy policies should be implemented.	8	17	17	29	34	21	16	142	4.35
The local government is capable of administering and implementing energy efficiency and renewable energy programs in my community.	15	25	24	26	24	19	9	142	3.79
Sustainable energy policies will improve the utility of land being used for commercial, industrial, and residential buildings in the city.	8	9	5	34	29	35	22	142	4.83

Statistic	The current fiscal status of the local government allows more investments into sustainable energy policies in my community.	The current status and future outlook of my local economy are conducive to adopting more sustainable energy policies.	There are opportunities to take advantage of cost savings and job creation by implementing sustainable energy policies in my local government and community.	There is public support for sustainable energy policies in my local government and community.	The community members, not just the local government, should be directly involved in the policy-making process regarding energy efficiency and renewable energy programs.	The general public does not know enough about the benefits and costs associated with the sustainable energy policies to play a crucial role in the policy-making process.	The technology for sustainable energy policies is readily accessible, feasible to implement, and cost effective.	A number of improvements to technology remain before sustainable energy policies should be implemented.	The local government is capable of administering and implementing energy efficiency and renewable energy programs in my community.	Sustainable energy policies will improve the utility of land being used for commercial, industrial, and residential buildings in the city.

MinValue	1	1	1	1	1	1	1	1	1	1
MaxValue	7	7	7	7	7	7	7	7	7	7
Mean	3.10	3.91	4.40	3.78	5.56	5.01	3.76	4.35	3.79	4.83
Variance	2.63	2.38	2.61	2.21	2.16	3.65	2.61	2.85	3.08	2.71
StandardDeviation	1.62	1.54	1.62	1.49	1.47	1.91	1.62	1.69	1.75	1.65

Total Responses	142	142	142	143	143	143	142	142	142	142

14. Recently, there has been a controversial policy debate concerning the installation of high voltage power lines in Northwest Arkansas and South Missouri, particularly in the regions under direct impact. While proponents argue that such an installation is inevitable to efficiently and reliably support the identified electric load for the area, opponents claim that such a practice will degrade the natural environment and hamper the tourism-based local economy in affected regions, notably Ozark mountain areas. The next several questions ask about your views on this issue. These questions concern your feelings, experiences, perceptions, and opinions, so don't worry about being right or wrong when you provide your answers. On a scale from one to seven, where one means extremely negative and seven means extremely positive, please indicate how you generally feel about the installation of high voltage power lines.

Answer		Response	%
Extremely negative 1		5	4%
2		19	13%
3		24	17%
Neutral 4		37	26%
5		28	20%
6		19	13%
Extremely positive 7		10	7%
Total		142	100%

Statistic	Value
Min Value	1
Max Value	7
Mean	4.13
Variance	2.39
Standard Deviation	1.54
Total Responses	142

15. With the following list of feelings using a scale from zero to ten, where zero means not at all and ten means extremely, please indicate how you feel as you think about high voltage power lines being installed in your area:

Question	Not at all 0	1	2	3	4	5	6	7	8	9	Extremely 10	Total Responses	Mean
Pleased	30	12	10	14	8	34	6	2	11	4	6	137	4.72
Happy	35	17	10	13	7	29	6	7	5	2	7	138	4.35
Excited	41	22	8	10	8	29	3	5	3	3	5	137	3.91
Irritated	31	13	10	8	7	25	14	9	6	5	9	137	4.94
Fearful	36	13	13	9	6	29	8	8	11	3	2	138	4.43
Calm	18	10	9	8	6	39	8	10	13	3	14	138	5.78
Apathetic	39	8	10	6	7	42	4	11	6	1	4	138	4.49
Angry	42	12	10	8	12	27	7	8	7	2	3	138	4.20
Content	23	13	14	8	14	34	9	4	7	5	6	137	4.90
Disgusted	42	13	10	11	5	27	9	5	4	5	6	137	4.26
Uncertain	31	8	7	5	8	42	6	9	5	5	10	136	5.14

Statistic	Pleased	Happy	Excited	Irritated	Fearful	Calm	Apathetic	Angry	Content	Disgusted	Uncertain
Min Value	1	1	1	1	1	1	1	1	1	1	1
Max Value	11	11	11	11	11	11	11	11	11	11	11
Mean	4.72	4.35	3.91	4.94	4.43	5.78	4.49	4.20	4.90	4.26	5.14
Variance	8.82	8.80	8.26	10.06	8.51	9.38	8.24	8.29	8.14	9.40	9.71
Standard Deviation	2.97	2.97	2.87	3.17	2.92	3.06	2.87	2.88	2.85	3.07	3.12
Total Responses	137	138	137	137	138	138	138	138	137	137	136

16. On a scale from zero to ten, where zero means not at all beneficial and ten means extremely beneficial, how much benefit do you think the installation of high voltage power lines in Northwest Arkansas and South Missouri would bring to your local government and community in the following categories?

Question	Not at all beneficial 0	1	2	3	4	5	6	7	8	9	Extremely beneficial 10	Total Responses	Mean
Energy supply stability and reliability	12	5	3	5	5	30	12	16	14	12	23	137	7.06
Efficient energy transmission	15	4	5	5	6	34	8	9	17	15	19	137	6.80
New economic opportunities and job creation	19	11	9	8	4	29	10	9	14	11	13	137	5.95
Provision of structure for renewable energy sources	21	4	11	9	7	37	10	10	14	6	7	136	5.65
Efficient land use	29	6	8	8	9	39	11	4	8	6	9	137	5.23
Necessary services maintained during post-disaster or high energy demand periods	13	4	6	5	9	29	9	12	13	18	19	137	6.88

Statistic	Energy supply stability and reliability	Efficient energy transmission	New economic opportunities and job creation	Provision of structure for renewable energy sources	Efficient land use	Necessary services maintained during post-disaster or high energy demand periods
Min Value	1	1	1	1	1	1
Max Value	11	11	11	11	11	11
Mean	7.06	6.80	5.95	5.65	5.23	6.88
Variance	9.17	9.81	10.59	8.60	9.35	9.57
Standard Deviation	3.03	3.13	3.25	2.93	3.06	3.09
Total Responses	137	137	137	136	137	137

17. On a scale from zero to ten, where zero means no risk and ten means extreme risk, how much risk do you think the installation of high voltage power lines in Northwest Arkansas and South Missouri would pose to your local government and community in the following categories?

Question	No risk 0	1	2	3	4	5	6	7	8	9	Extreme risk 10	Total Responses	Mean
Environmental degradation from clear-cutting trees for power line installation	27	9	10	12	4	17	10	11	10	8	13	131	5.47
Pesticide/herbicide use for securing power lines	25	12	12	5	8	22	8	8	11	10	10	131	5.39
Decreasing property values in affected areas	24	5	13	11	3	19	6	12	12	12	14	131	5.85
Threats to tourism (and/or other related industries)	33	10	10	11	9	17	9	12	4	6	10	131	4.88
Negative health impacts due to electromagnetic field emission	34	10	10	15	5	20	4	8	11	6	8	131	4.79

Statistic	Environmental degradation from clear-cutting trees for power line installation	Pesticide/herbicide use for securing power lines	Decreasing property values in affected areas	Threats to tourism (and/or other related industries)	Negative health impacts due to electromagnetic field emission
Min Value	1	1	1	1	1
Max Value	11	11	11	11	11
Mean	5.47	5.39	5.85	4.88	4.79
Variance	11.70	11.18	11.88	10.78	10.81
Standard Deviation	3.42	3.34	3.45	3.28	3.29
Total Responses	131	131	131	131	131

18. Using a scale from one to seven, where one means the risks of installation of high voltage power lines far outweigh its benefits, four means the risks and benefits are equally balanced, and seven means the benefits of the installation of high voltage power lines far outweigh its risks, how do you rate the overall balance of the risks and benefits associated with such a power line installation in your local government and community? Remember, you can choose any number from one to seven.

Answer		Response	%
Risk far outweigh benefits 1		5	4%
2		5	4%
3		21	16 %
Risks and benefits are equally balanced 4		34	26 %
5		28	21 %
6		21	16 %
Benefits far outweigh risks 7		17	13 %
Total		131	100 %

Statistic	Value
Min Value	1
Max Value	7
Mean	4.57
Variance	2.37
Standard Deviation	1.54
Total Responses	131

19. Please respond to each of the following statements using a scale from one to seven, where one means strongly disagree and seven means strongly agree.

Question	Strongly disagree 1	2	3	4	5	6	Strongly agree 7	Total Responses	Mean
Society is in trouble because people do not obey those in authority.	15	20	17	32	17	23	7	131	3.86
The best way to get ahead in life is to do what you are told to do to the best of your abilities.	16	20	18	32	22	14	9	131	3.78
For the most part, succeeding in life is a matter of chance.	38	38	17	17	13	7	1	131	2.65
Society works best if power is shared equally.	12	10	19	28	23	29	10	131	4.27
We are all better off when we compete as individuals.	9	21	18	27	19	20	17	131	4.18
Even the disadvantaged should have to make their own way in the world.	14	19	20	27	23	21	7	131	3.89
It is our responsibility to reduce differences in income between the rich and the poor.	39	18	14	11	22	16	11	131	3.39
No matter how hard we try, the course of our lives is largely determined by forces beyond our control.	31	29	22	22	17	5	5	131	3.00
Even if some people are at a disadvantage, it is best for society to let people succeed or fail on their own.	12	17	20	19	29	21	13	131	4.15
Most of the important things that take place in life happen by random chance.	42	43	22	12	6	6	0	131	2.35
What society needs is a fairness revolution to make the distribution of goods more equal.	48	23	14	18	14	9	5	131	2.80
Society would be much better off if we imposed strict and swift punishment on those who break the rules.	11	14	14	24	15	31	22	131	4.52

Statistic	Society is in trouble because people do not obey those in authority.	The best way to get ahead in life is to do what you are told to do to the best of your abilities.	For the most part, succeeding in life is a matter of chance.	Society works best if power is shared equally.	We are all better off when we compete as individuals.	Even the disadvantaged should have to make their own way in the world.	It is our responsibility to reduce differences in income between the rich and the poor.	No matter how hard we try, the course of our lives is largely determined by forces beyond our control.	Even if some people are at a disadvantage, it is best for society to let people succeed or fail on their own.	Most of the important things that take place in life happen by random chance.	What society needs is a fairness revolution to make the distribution of goods more equal.	Society would be much better off if we imposed strict and swift punishment on those who break the rules.
Min Value	1	1	1	1	1	1	1	1	1	1	1	1
Max Value	7	7	7	7	7	7	7	7	7	6	7	7
Mean	3.86	3.78	2.65	4.27	4.18	3.89	3.39	3.00	4.15	2.35	2.80	4.52
Variance	3.09	3.04	2.48	2.97	3.32	3.00	4.41	2.83	3.25	1.89	3.42	3.62
Standard De	1.76	1.74	1.57	1.72	1.82	1.73	2.10	1.68	1.80	1.38	1.85	1.90

viation												
Total Responses	131	131	131	131	131	131	131	131	131	131	131	131

20. Which of the following statements best describes your outlook on life?

Answer		Response	%
I am more comfortable when I know who is, and who is not, a part of my group, and loyalty to the group is important to me. I prefer to know who is in charge and to have clear rules and procedures; those who are in charge should punish those who break the rules. I like to have my responsibilities clearly defined, and I believe people should be rewarded based on the position they hold and their competence. Most of the time, I trust those with authority and expertise to do what is right for society.		34	28%
Groups are not all that important to me. I prefer to make my own way in life without having to follow other peoples' rules. Rewards in life should be based on initiative, skill, and hard work, even if that results in inequality. I respect people based on what they do, not the positions or titles they hold. I like relationships that are based on negotiated "give and take," rather than on status. Everyone benefits when individuals are allowed to compete.		73	60%
Society today is unfair and corrupt, and my most important contributions are made as a member of a group that promotes justice and equality. Within my group, everyone should play an equal role without differences in rank or authority. It is easy to lose track of what is important, so I have to keep a close eye on the actions of my group. It is not enough to provide equal opportunities; we also have to try to make outcomes more equal.		11	9%
Life is unpredictable and I have little control. I have to live by lots of rules, but I don't get to make them. My fate in life is determined mostly by chance. I can't become a member of the groups that make most of the important decisions affecting me. Getting along in life is largely a matter of doing the best I can with what comes my way, so I focus on taking care of myself and the people closest to me.		4	3%
Total		122	100 %

21. Please respond to each of the following statements using a scale from one to seven, where one means strongly disagree and seven means strongly agree.

Question	Strongly disagree 1	2	3	4	5	6	Strongly agree 7	Total Responses	Mean
Technically trained experts, not the public, should make decisions about the application of advanced technologies within society, such as new mandatory vaccines, use of genetically engineered foods, or reliance on nuclear energy.	25	13	18	31	11	17	6	121	3.54
Advanced technologies can solve almost all of society's problems.	20	29	23	25	13	10	1	121	3.13
The results of scientific research are always significantly affected by the values held by the researcher.	4	14	15	29	32	15	13	122	4.38
Researchers can manipulate their analysis to advocate their own beliefs and policy positions.	3	4	9	11	25	34	35	121	5.42
The evidence-based scientific process is the only valid and reliable way to understand nature and society.	12	17	19	23	26	15	9	121	3.95
Most members of the general public are not capable of understanding the policy implications of modern science and technology.	13	20	18	21	24	15	10	121	3.89
When researchers and scientists become advisers to policy makers, they have to sacrifice some of their independent objectivity to advocate the predetermined policy positions of their "clients".	12	15	18	24	26	19	7	121	4.01
Those who are better informed and knowledgeable should have more influence in policy making.	7	3	11	13	38	36	13	121	4.92
Technical issues are so complex that most people cannot contribute to reasonable policy choices.	15	18	31	29	16	9	3	121	3.43
Even if the public is not well-informed about an issue, policy makers should rely on mass opinion	24	18	29	11	21	15	3	121	3.36

in making important policy decisions about that issue.									
When taken as a whole, public opinion usually provides reasonable direction for public policy.	5	13	16	25	31	22	9	121	4.37

Statistic	Technically trained experts, not the public, should make decisions about the application of advanced technologies within society, such as new mandatory vaccines, use of genetically engineered foods, or reliance on nuclear energy.	Advanced technologies can solve almost all of society's problems.	The results of scientific research are always significantly affected by the values held by the researcher.	Researchers can manipulate their analysis to advocate their own beliefs and policy positions.	The evidence-based scientific process is the only valid and reliable way to understand nature and society.	Most members of the general public are not capable of understanding the policy implications of modern science and technology.	When researchers and scientists become advisers to policy makers, they have to sacrifice some of their independent objectivity to advocate the predetermined policy positions of their "clients".	Those who are better informed and knowledgeable should have more influence in policy making.	Technical issues are so complex that most people cannot contribute to reasonable policy choices.	Even if the public is not well-informed about an issue, policy makers should rely on mass opinion in making important policy decisions about that issue.	When taken as a whole, public opinion usually provides reasonable direction for public policy.
Min Value	1	1	1	1	1	1	1	1	1	1	1
Max Value	7	7	7	7	7	7	7	7	7	7	7

Mean	3.54	3.13	4.38	5.42	3.95	3.89	4.01	4.92	3.43	3.36	4.37
Variance	3.35	2.42	2.47	2.36	3.01	3.23	2.92	2.36	2.31	3.13	2.47
Standard Deviation	1.83	1.55	1.57	1.54	1.74	1.80	1.71	1.54	1.52	1.77	1.57
Total Responses	121	121	122	121	121	121	121	121	121	121	121

22. With which of the following major religions do you most identify?

Answer		Response	%
Buddhism		1	1%
Catholicism		13	11%
Protestantism		74	61%
Hinduism		0	0%
Islam		0	0%
Judaism		1	1%
Something else (specify)		22	18%
No religion		10	8%
Total		121	100%

23. Now, using a scale from zero to ten, where zero means not at all important and ten means extremely important, how important is religious faith in your life?

Answer		Response	%
Not at all important 0		5	4%
1		3	3%
2		2	2%
3		1	1%
4		3	3%
5		4	3%
6		7	6%
7		8	7%
8		19	16%
9		14	12%
Extremely important 10		53	45%
Total		119	100%

Statistic	Value
Min Value	1
Max Value	11
Mean	8.97
Variance	7.71
Standard Deviation	2.78
Total Responses	119

24. Do you have an account on a web-based social networking site, such as Facebook, Twitter, or Linkedin?

Answer		Response	%
No		20	16%
Yes		102	84%
Total		122	100%

Statistic	Value
Min Value	1
Max Value	2
Mean	1.84
Variance	0.14
Standard Deviation	0.37
Total Responses	122

25. How often do you update or access your social networking account?

Answer		Response	%
Never		7	7%
Less than once a month		16	16%
Several times a month		7	7%
About once a week		11	11%
Several times a week		16	16%
Once or twice most days		23	23%
Several times almost every day		22	22%
Total		102	100%

Statistic	Value
Min Value	1
Max Value	7
Mean	4.67
Variance	3.91
Standard Deviation	1.98
Total Responses	102

26. Are you now, or have you in the past, affiliated with any of the following organizational/professional categories? (Check all that apply)

Answer		Response	%
Governmental sector involved with environmental conservation and sustainability issues (e.g., U.S. Environmental Protection Agency, Arkansas Department of Environmental Quality, Fayetteville Department of Sustainability and Resilience, etc.)		29	33%
Governmental sector involved with park and recreation issues (e.g., U.S. National Park Service, Arkansas Department of Parks and Tourism, Fayetteville Department of Parks and Recreation, etc.)		47	54%
Governmental sector involved with economic/regional development (e.g., U.S. Department of Commerce, Arkansas Economic Development Commission, Fayetteville Economic Development, etc.)		39	45%
Governmental sector involved with energy issues (e.g., U.S. Department of Energy, Arkansas State Energy Office, etc.)		17	20%
Non-profit sector involved with environmental conservation and sustainability issues (e.g., Sierra Club, Nature Conservancy, etc.)		21	24%
Non-profit sector involved with economic/regional development issues (e.g., Northwest Arkansas Council, City Chambers of Commerce, etc.)		49	56%
Energy business sector (e.g., Electric Cooperatives of Arkansas, Southwestern Electric Power Company, etc.)		17	20%
Tourism/leisure/hospitality business sector		35	40%

27. On a scale from zero to ten where zero means not at all informed and ten means completely informed, how well informed do you consider yourself to be about the issues regarding energy policy in general, and particularly, high voltage power line installation?

Answer		Response	%
Not at all informed 0		4	3%
1		11	9%
2		5	4%
3		8	7%
4		8	7%
5		13	11%
6		20	17%
7		19	16%
8		18	15%
9		8	7%
Completely informed 10		7	6%
Total		121	100%

Statistic	Value
Min Value	1
Max Value	11
Mean	6.63
Variance	7.29
Standard Deviation	2.70
Total Responses	121

28. To the best of your knowledge, are the following statements true or false?

* Correct answer

Question	False	True	Total Responses	Mean
Most scientists and energy experts agree that the estimates for natural gas reserves in the U.S. have increased since 2001.	19	94*	113	1.83
Coal-fired electric power plants in Arkansas supply almost three quarters of the state's electricity.	38*	77	115	1.67
There has been a state decision on the prospective placement of high voltage power lines in Northwest Arkansas.	80	33*	113	1.29
A state legislation has been proposed to prevent the prospective installation of high voltage power lines in either Arkansas or Missouri.	60	50*	110	1.45
Independent power producers provide about a quarter of net electricity generation in Arkansas.	40	72*	112	1.64
Arkansas recently ranked 17th in the nation in terms of total energy consumed per capita.	40	71*	111	1.64
Biomass supplied all of Arkansas' non-hydroelectric renewable energy resources for electricity generation in 2010.	92	18*	110	1.16
Most scientists agree that electromagnetic fields from high voltage power lines can increase the risk of leukemia among those living in their proximity.	80*	35	115	1.30

29. Using a scale where zero means not at all trustworthy, and ten means completely trustworthy, how trustworthy is information about policy issues, such as sustainable energy and high voltage power lines, from each of the following sources?

Question	Not at all trustworthy 0	1	2	3	4	5	6	7	8	9	Completely trustworthy 10	Total Responses	Mean
The Internet, including independent news sources, blogs, and discussion groups	10	12	11	23	13	22	7	12	5	1	1	117	4.85
Friends and family	4	6	15	7	17	37	8	3	10	6	4	117	5.73
Government agencies	1	7	7	8	14	23	19	22	10	5	1	117	6.29
Environmental conservation groups	7	7	11	10	19	19	11	12	11	7	3	117	5.79
Economic/regional development groups	3	2	7	13	10	30	14	14	15	8	1	117	6.38
Scientists and academics	0	1	3	2	5	22	14	22	24	21	3	117	7.77
Mainstream news media	5	10	17	16	13	26	8	14	6	2	0	117	5.15
Religious leaders	11	11	12	10	13	31	3	4	12	8	1	116	5.28
Energy industry	5	8	10	13	11	24	16	9	12	7	2	117	5.86
Tourism industry	5	6	11	8	14	37	6	17	9	2	2	117	5.77

Statistic	The Internet, including independent news sources, blogs, and discussion groups	Friends and family	Government agencies	Environmental conservation groups	Economic/regional development groups	Scientists and academics	Mainstream news media	Religious leaders	Energy industry	Tourism industry
Min Value	1	1	1	1	1	2	1	1	1	1
Max Value	11	11	11	11	11	11	10	11	11	11
Mean	4.85	5.73	6.29	5.79	6.38	7.77	5.15	5.28	5.86	5.77
Variance	5.44	5.80	4.64	6.77	4.94	3.61	5.01	7.23	6.26	5.14
Standard Deviation	2.33	2.41	2.15	2.60	2.22	1.90	2.24	2.69	2.50	2.27
Total Responses	117	117	117	117	117	117	117	116	117	117

30. Which of the following best describes your race or ethnic background?

Answer		Response	%
American Indian		1	1%
Asian		0	0%
Black or African American		8	7%
Hispanic		0	0%
White non-Hispanic		103	88%
Something else (specify)		5	4%
Total		117	100%

Something else (specify)
American
caucasian
Ozark Hillbilly

31. What is the highest level of education you have completed?

Answer		Response	%
Elementary or some high school		0	0%
High school graduate/GED		2	2%
Some college/vocational school		26	22%
College graduate		43	36%
Some graduate work		8	7%
Master's degree		26	22%
Doctorate (of any type)		14	12%
Other degree (specify)		1	1%
Total		120	100%

32. Are you male or female?

Answer		Response	%
Female		33	28%
Male		85	72%
Total		118	100%

Statistic	Value
Min Value	1
Max Value	2
Mean	1.72
Variance	0.20
Standard Deviation	0.45
Total Responses	118

33. What is the five digit zip code at your residence? (This information will only be used to compare grouped regional differences, not to identify you.)

Statistic	Value
Total Responses	119

34. Which of the following income categories approximates the total estimated annual income from your household for the previous year?

Answer		Response	%
Less than $50,000		14	12%
At least $50,000 but less than $100,000		49	41%
At least $100,000 but less than $150,000		40	34%
$150,000 or more		16	13%
Total		119	100%

35. Was the estimated annual income for your household last year:

Answer		Response	%
Less than $10,000		1	7%
$10,000 to less than $20,000		3	21%
$20,000 to less than $30,000		0	0%
$30,000 to less than $40,000		7	50%
$40,000 to less than $50,000		3	21%
Total		14	100%

36. Was the estimated annual income for your household last year:

Answer		Response	%
$50,000 to less than $60,000		7	14%
$60,000 to less than $70,000		11	22%
$70,000 to less than $80,000		10	20%
$80,000 to less than $90,000		10	20%
$90,000 to less than $100,000		11	22%
Total		49	100%

37. Was the estimated annual income for your household last year:

Answer		Response	%
$100,000 to less than $110,000		11	28%
$110,000 to less than $120,000		9	23%
$120,000 to less than $130,000		10	26%
$130,000 to less than $140,000		4	10%
$140,000 to less than $150,000		5	13%
Total		39	100%

38. Was the estimated annual income for your household last year:

Answer		Response	%
$150,000 to less than $160,000		3	19%
$160,000 to less than $170,000		1	6%
$170,000 to less than $180,000		2	13%
$180,000 to less than $190,000		0	0%
$190,000 to less than $200,00		1	6%
$200,000 or more		9	56%
Total		16	100%

39. On a scale of political ideology, individuals can be arranged from strongly liberal to strongly conservative. Which of the following best describes your views?

Answer		Response	%
Strongly liberal 1		3	3%
Liberal 2		21	18%
Slightly liberal 3		16	13%
Middle of the road 4		17	14%
Slightly conservative 5		24	20%
Conservative 6		30	25%
Strongly conservative 7		8	7%
Total		119	100%

Statistic	Value
Min Value	1
Max Value	7
Mean	4.34
Variance	2.79
Standard Deviation	1.67
Total Responses	119

40. With which political party do you most identify?

Answer		Response	%
Democratic		47	40%
Republican		33	28%
Independent		36	31%
Other party (specify)		1	1%
Total		117	100%

Other party (specify)
Libertarian